

L79 10 S E5-E14

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FILE 'HCAPLUS' ENTERED AT 13:33:52 ON 08 MAR 2006

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FILE LAST UPDATED: 7 Mar 2006 (20060307/ED)

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This file contains CAS Registry Numbers for easy and accurate substance identification.

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L78 ANSWER 1 OF 13 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2004:326175 HCAPLUS

DN 140:323187

ED Entered STN: 22 Apr 2004 *Not Good date*TI Low sodium cumene hydroperoxide cleavage product in phenol production

IN Wilks, Theodor Robert; Vandersall, Mark Thornton; Rogers, William Frederick, Jr.

PA Kellogg Brown & Root, Inc., USA

SO Eur. Pat. Appl., 17 pp.

CODEN: EPXXDW

DT Patent

LA English

IC ICM C07C0045-53

ICS C07C0049-08; C07C0045-79; C07C0037-08; C07C0039-04; C07C0037-82

CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1411040	A1	20040421	EP 2003-22968	20031009
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
	US 2004106831	A1	20040603	US 2003-605155	20030911
	US 6825387	B2	20041130		
	BR 2003004274	A	20040831	BR 2003-4274	20031014
	JP 2004285045	A2	20041014	JP 2003-387230	20031014
	CN 1548410	A	20041124	CN 2003-10104572	20031014

jan delaval - 8 march 2006

PRAI US 2002-319619P P 20021015
 US 2003-605155 A 20030911

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
EP 1411040	ICM	C07C0045-53
	ICS	C07C0049-08; C07C0045-79; C07C0037-08; C07C0039-04; C07C0037-82
	IPCI	C07C0045-53 [ICM,7]; C07C0049-08 [ICS,7]; C07C0045-79 [ICS,7]; C07C0037-08 [ICS,7]; C07C0039-04 [ICS,7]; C07C0037-82 [ICS,7]
	IPCR	C07C0037-00 [I,C]; C07C0037-08 [I,A]; C07C0037-82 [I,A]; C07C0045-00 [I,C]; C07C0045-53 [I,A]
	ECLA	C07C037/08; C07C037/82; C07C045/53; C07C045/53+49/08
US 2004106831	IPCI	C07C0037-08 [ICM,7]; C07C0045-78 [ICS,7]
	IPCR	C07C0037-00 [I,C]; C07C0037-08 [I,A]; C07C0037-82 [I,A]; C07C0045-00 [I,C]; C07C0045-53 [I,A]
	NCL	568/411.000
	ECLA	C07C037/08; C07C037/82; C07C045/53; C07C045/53+49/08
BR 2003004274	IPCI	C07C0027-12 [ICM,7]; C07C0037-08 [ICS,7]; C07C0045-37 [ICS,7]; C07C0039-04 [ICS,7]; C07C0049-08 [ICS,7]
JP 2004285045	IPCI	C07C0027-00 [ICM,7]; C07C0037-08 [ICS,7]; C07C0039-04 [ICS,7]; C07C0045-53 [ICS,7]; C07C0049-08 [ICS,7]; C07B0061-00 [ICS,7]
	FTERM	4H006/AA02; 4H006/AC42; 4H006/AC44; 4H006/AD11; 4H006/BA16; 4H006/BA20; 4H006/BA32; 4H006/BA66; 4H006/BA72; 4H006/BC50; 4H006/BC51; 4H006/BC52; 4H006/BD41; 4H006/BD70; 4H006/BD84; 4H006/BE03; 4H006/BE10; 4H006/BE60; 4H039/CA60; 4H039/CA62; 4H039/CA64; 4H039/CC30
CN 1548410	IPCI	C07C0039-04 [ICM,7]; C07C0049-08 [ICS,7]; C07C0045-00 [ICS,7]; C07C0037-08 [ICS,7]

AB Washed cleavage product (WCP) in a **phenol** manufacturing process is treated to remove sodium ions. The WCP is contacted with a **cation exchange** resin in hydrogen form, and then with **anion exchange** resin in free base or hydroxide form, to produce a WCP essentially free of sodium ions. The cation and **anion exchange** resins are regenerated with acid and caustic, resp. The treatment improves productivity and product quality of new and existing **phenol** processes.

ST **cumene hydroperoxide** cleavage product ion
 exchange treatment **phenol** manuf

IT **Anion exchangers**

Cation exchangers

(low sodium **cumene hydroperoxide** cleavage product
 in **phenol** production)

IT **67-64-1P, Acetone, preparation 108-95-2P,**

Phenol, preparation

RL: IMF (Industrial manufacture); PREP (Preparation)

(low sodium **cumene hydroperoxide** cleavage product
 in **phenol** production)

IT **80-15-9P, Cumene hydroperoxide**

RL: IMF (Industrial manufacture); RCT (Reactant); PREP
 (Preparation); RACT (Reactant or reagent)

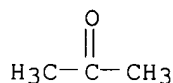
(low sodium **cumene hydroperoxide** cleavage product
 in **phenol** production)

IT **9003-70-7D, Divinylbenzene-styrene copolymer, sulfonated**

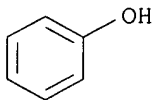
RL: NUU (Other use, unclassified); USES (Uses)

(low sodium **cumene hydroperoxide** cleavage product
 in **phenol** production)

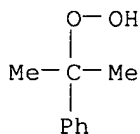
IT 98-82-8, Cumene
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (low sodium **cumene hydroperoxide** cleavage product
 in **phenol** production)
 RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD
 RE
 (1) California Research Corp; GB 743004 A 1956
 (2) Fa, S; DE 1239701 B 1967 HCAPLUS
 (3) Phenolchemie Gmbh & Co Kg; EP 1018501 A 2000 HCAPLUS
 (4) Sir Soc Italiana Resine Spa; GB 970945 A 1964 HCAPLUS
 IT 67-64-1P, Acetone, preparation 108-95-2P,
 Phenol, preparation
 RL: IMF (Industrial manufacture); PREP (Preparation)
 (low sodium **cumene hydroperoxide** cleavage product
 in **phenol** production)
 RN 67-64-1 HCAPLUS
 CN 2-Propanone (9CI) (CA INDEX NAME)



RN 108-95-2 HCAPLUS
 CN Phenol (8CI, 9CI) (CA INDEX NAME)

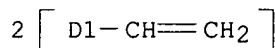


IT 80-15-9P, Cumene hydroperoxide
 RL: IMF (Industrial manufacture); RCT (Reactant); PREP
 (Preparation); RACT (Reactant or reagent)
 (low sodium **cumene hydroperoxide** cleavage product
 in **phenol** production)
 RN 80-15-9 HCAPLUS
 CN Hydroperoxide, 1-methyl-1-phenylethyl (9CI) (CA INDEX NAME)



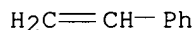
IT 9003-70-7D, Divinylbenzene-styrene copolymer, **sulfonated**
 RL: NUU (Other use, unclassified); USES (Uses)
 (low sodium **cumene hydroperoxide** cleavage product
 in **phenol** production)
 RN 9003-70-7 HCAPLUS
 CN Benzene, diethenyl-, polymer with ethenylbenzene (9CI) (CA INDEX NAME)
 CM 1
 CRN 1321-74-0

CMF C10 H10
CCI IDS



CM 2

CRN 100-42-5
CMF C8 H8



L78 ANSWER 2 OF 13 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2003:737703 HCAPLUS
DN 139:262464
ED Entered STN: 19 Sep 2003 *Not good date*
TI Process for the synthesis of **phenol** and **acetone** from

cumene hydroperoxide using acidic **cation**
exchangers

IN **Codignola, Franco**
PA **Eurotecnica Development & Licensing S.P.A., Italy**
SO PCT Int. Appl., 17 pp.
CODEN: PIXXD2

DT Patent
LA English

IC ICM C07C0037-08
ICS C07C0045-53; C07C0039-04; C07C0049-08; B01J0031-10; B01J0019-00
CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
Section cross-reference(s): 23, 25, 48, 67

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2003076376	A2	20030918	WO 2002-IT156	20020314 <--
	WO 2003076376	A3	20031113		
	W:				
	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,				
	CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,				
	GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,				
	LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH,				
	PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ,				
	UA, UG, US, UZ, VN, YU, ZA, ZM, ZW				
	RW:				
	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY,				
	KG, KZ, MD, RU, TJ, TM, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB,				
	GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA,				
	GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	AU 2002249564	A1	20030922	AU 2002-249564	20020314 <--
	EP 1492752	A2	20050105	EP 2002-718517	20020314 <--

jan delaval - 8 march 2006

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
IE, SI, LT, LV, FI, RO, MK, CY, AL, TR

US 2005177004 A1 20050811 US 2003-507225 20020314 <--
PRAI WO 2002-IT156 A 20020314 <--

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
WO 2003076376	ICM	C07C0037-08
	ICS	C07C0045-53; C07C0039-04; C07C0049-08; B01J0031-10; B01J0019-00
	IPCI	C07C0037-08 [ICM,7]; C07C0045-53 [ICS,7]; C07C0039-04 [ICS,7]; C07C0049-08 [ICS,7]; B01J0031-10 [ICS,7]; B01J0019-00 [ICS,7]
	IPCR	B01J0008-20 [I,A]; B01J0008-20 [I,C]; C07C0045-00 [I,C]; C07C0045-53 [I,A]
	ECLA	B01J008/20; C07C045/53+49/08 <--
AU 2002249564	IPCI	C07C0037-08 [ICM,7]; C07C0049-08 [ICS,7]; B01J0031-10 [ICS,7]; B01J0019-00 [ICS,7]; C07C0045-53 [ICS,7]; C07C0039-04 [ICS,7] <--
EP 1492752	IPCI	C07C0037-08 [ICM,7]; C07C0045-53 [ICS,7]; C07C0039-04 [ICS,7]; C07C0049-08 [ICS,7]; B01J0031-10 [ICS,7]; B01J0019-00 [ICS,7]
	IPCR	B01J0008-20 [I,A]; B01J0008-20 [I,C]; C07C0045-00 [I,C]; C07C0045-53 [I,A] <--
US 2005177004	IPCI	C07C0037-08 [ICM,7]; C07C0045-55 [ICS,7]
	NCL	568/485.000 <--

OS CASREACT 139:262464

AB A process for the manufacture of **phenol** and **acetone** from **cumene hydroperoxide** comprises: (a) pretreating the **cumene hydroperoxide** feed with acidic **cation-exchange** resins (e.g., Amberlyst 18) to obtain **cumene hydroperoxide** free of inorg. cations; and (b) decomposing the treated **cumene hydroperoxide** in the presence of acidic resins, to yield **phenol** and **acetone** at an elevated temperature The spent **cation exchangers** are regenerated by contacting them with a **sulfuric acid** solution

ST **acetone phenol** manuf thermal decompn **cumene hydroperoxide**; acid **cation exchanger** treatment
IT **cumene hydroperoxide** thermal decompn

IT **Cation exchangers**
(acidic; process for the synthesis of **phenol** and **acetone** from **cumene hydroperoxide** using acidic **cation exchangers**)

IT Ketones, preparation
RL: EPR (Engineering process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process)

(aliphatic, **acetone**; process for the synthesis of **phenol** and **acetone** from **cumene hydroperoxide** using acidic **cation exchangers**)

IT Hydroperoxides
RL: EPR (Engineering process); PEP (Physical, engineering or chemical process); PUR (Purification or recovery); PYP (Physical process); RCT (Reactant); PREP (Preparation); PROC (Process); RACT (Reactant or reagent)
(**cumene hydroperoxide**; process for the synthesis of **phenol** and **acetone** from **cumene hydroperoxide** using acidic **cation exchangers**)

IT Polyoxyalkylenes, reactions
RL: CAT (Catalyst use); EPR (Engineering process); PEP (Physical,

- engineering or chemical process); RGT (Reagent); PROC (Process); RACT (Reactant or reagent); USES (Uses)
(fluorine- and **sulfo**-containing, ionomers; process for the synthesis of **phenol** and **acetone** from **cumene hydroperoxide** using)
- IT **Phenols**, preparation
RL: EPR (Engineering process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process)
(**phenol**; process for the synthesis of **phenol** and **acetone** from **cumene hydroperoxide** using acidic **cation exchangers**)
- IT Fluoropolymers, reactions
RL: CAT (Catalyst use); EPR (Engineering process); PEP (Physical, engineering or chemical process); RGT (Reagent); PROC (Process); RACT (Reactant or reagent); USES (Uses)
(polyoxyalkylene-, **sulfo**-containing, ionomers; process for the synthesis of **phenol** and **acetone** from **cumene hydroperoxide** using)
- IT Ionomers
RL: CAT (Catalyst use); EPR (Engineering process); PEP (Physical, engineering or chemical process); RGT (Reagent); PROC (Process); RACT (Reactant or reagent); USES (Uses)
(polyoxyalkylenes, fluorine- and **sulfo**-containing; process for the synthesis of **phenol** and **acetone** from **cumene hydroperoxide** using)
- IT Thermal decomposition
(process for the synthesis of **phenol** and **acetone** from **cumene hydroperoxide** using acidic **cation exchangers** and)
- IT Pyrolyzers
(process for the synthesis of **phenol** and **acetone** from **cumene hydroperoxide** using acidic **cation exchangers** in)
- IT 9003-53-6D, Polystyrene, **sulfonated** derivs.
9003-70-7D, Divinylbenzene-styrene copolymer, **sulfonated** derivs.
RL: CAT (Catalyst use); EPR (Engineering process); PEP (Physical, engineering or chemical process); RGT (Reagent); PROC (Process); RACT (Reactant or reagent); USES (Uses)
(acidic **cation exchangers**; process for the synthesis of **phenol** and **acetone** from **cumene hydroperoxide** using)
- IT 7664-93-9, Sulfuric acid, reactions
RL: EPR (Engineering process); PEP (Physical, engineering or chemical process); RGT (Reagent); PROC (Process); RACT (Reactant or reagent)
(catalyst regeneration agent; for the regeneration of spent acid **cation exchangers** used in the synthesis of **phenol** and **acetone** from **cumene hydroperoxide**)
- IT 9037-24-5, Amberlyst 15 143549-73-9, Amberlyst 18
RL: CAT (Catalyst use); EPR (Engineering process); PEP (Physical, engineering or chemical process); RGT (Reagent); PROC (Process); RACT (Reactant or reagent); USES (Uses)
(process for the synthesis of **phenol** and **acetone** from **cumene hydroperoxide** using)
- IT 67-64-1P, Acetone, preparation 108-95-2P, **Phenol**, preparation
RL: EPR (Engineering process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process)

; PREP (Preparation); PROC (Process)
 (process for the synthesis of **phenol** and **acetone**
 from **cumene hydroperoxide** using acidic
 cation exchangers)

IT 80-15-9P, Cumene hydroperoxide
 RL: EPR (Engineering process); PEP (Physical, engineering
 or chemical process); PUR (Purification or recovery); PYP
 (Physical process); RCT (Reactant); PREP (Preparation);
 PROC (Process); RACT (Reactant or reagent)
 (process for the synthesis of **phenol** and **acetone**
 from **cumene hydroperoxide** using acidic
 cation exchangers)

IT 9003-53-6D, Polystyrene, **sulfonated** derivs.
 9003-70-7D, Divinylbenzene-styrene copolymer, **sulfonated**
 derivs.
 RL: CAT (Catalyst use); EPR (Engineering process); PEP (Physical,
 engineering or chemical process); RGT (Reagent); PROC (Process); RACT
 (Reactant or reagent); USES (Uses)
 (acidic **cation exchangers**; process for the
 synthesis of **phenol** and **acetone** from **cumene**
hydroperoxide using)

RN 9003-53-6 HCAPLUS
 CN Benzene, ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 100-42-5
 CMF C8 H8

$\text{H}_2\text{C}=\text{CH}-\text{Ph}$

RN 9003-70-7 HCAPLUS
 CN Benzene, diethenyl-, polymer with ethenylbenzene (9CI) (CA INDEX NAME)

CM 1

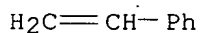
CRN 1321-74-0
 CMF C10 H10
 CCI IDS



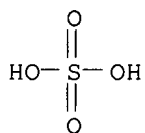
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CM 2

CRN 100-42-5
 CMF C8 H8



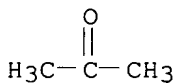
IT 7664-93-9, Sulfuric acid, reactions
 RL: EPR (Engineering process); PEP (Physical, engineering or chemical process); RGT (Reagent); PROC (Process); RACT (Reactant or reagent) (catalyst regeneration agent; for the regeneration of spent acid cation exchangers used in the synthesis of phenol and acetone from cumene hydroperoxide)
 RN 7664-93-9 HCAPLUS
 CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



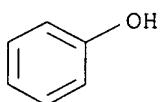
IT 9037-24-5, Amberlyst 15 143549-73-9, Amberlyst 18
 RL: CAT (Catalyst use); EPR (Engineering process); PEP (Physical, engineering or chemical process); RGT (Reagent); PROC (Process); RACT (Reactant or reagent); USES (Uses) (process for the synthesis of phenol and acetone from cumene hydroperoxide using)
 RN 9037-24-5 HCAPLUS
 CN Amberlyst 15 (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
 RN 143549-73-9 HCAPLUS
 CN Amberlyst 18 (9CI) (CA INDEX NAME)

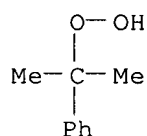
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
 IT 67-64-1P, Acetone, preparation 108-95-2P, Phenol, preparation
 RL: EPR (Engineering process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process) (process for the synthesis of phenol and acetone from cumene hydroperoxide using acidic cation exchangers)
 RN 67-64-1 HCAPLUS
 CN 2-Propanone (9CI) (CA INDEX NAME)



RN 108-95-2 HCAPLUS
 CN Phenol (8CI, 9CI) (CA INDEX NAME)



IT 80-15-9P, Cumene hydroperoxide
 RL: EPR (Engineering process); PEP (Physical, engineering or chemical process); PUR (Purification or recovery); PYP (Physical process); RCT (Reactant); PREP (Preparation); PROC (Process); RACT (Reactant or reagent)
 (process for the synthesis of phenol and acetone from cumene hydroperoxide using acidic cation exchangers)
 RN 80-15-9 HCAPLUS
 CN Hydroperoxide, 1-methyl-1-phenylethyl (9CI) (CA INDEX NAME)



L78 ANSWER 3 OF 13 HCAPLUS COPYRIGHT 2006 ACS on STN
 AN 2001:676731 HCAPLUS
 DN 135:212606
 ED Entered STN: 14 Sep 2001
 TI Method of producing cumene hydroperoxide, phenol and acetone
 IN Zakoshansky, Vladimir
 PA Illa International L.L.C., USA
 SO PCT Int. Appl., 54 pp.
 CODEN: PIXXD2
 DT Patent
 LA English
 IC ICM C07C0037-08
 CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 2001066500	A1	20010913	WO 2001-US6361	20010228
W: AE, AL, AU, BA, BB, BG, BR, BZ, CA, CN, CU, CZ, DM, EE, GE, HU, ID, IL, IN, IS, JP, KP, KR, LC, LK, LT, LV, MA, MK, MN, MX, NO, NZ, PL, RO, SG, SI, SK, TT, UA, UZ, VN, ZA, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
US 2002013502	A1	20020131	US 2001-796276	20010228
US 6943270	B2	20050913		
PRAI US 2000-186923P	P	20000303		
US 2000-243443P	P	20001026		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
WO 2001066500	ICM	C07C0037-08

IPCI C07C0037-08 [ICM,7]
 IPCR C07C0039-00 [I,C]; C07C0039-04 [I,A]; C07C0045-00 [I,C]; C07C0045-53 [I,A]
 ECLA C07C039/04; C07C045/53+49/08
 US 2002013502 IPCI C07C0045-27 [ICM,7]; C07C0037-08 [ICS,7]
 IPCR C07C0039-00 [I,C]; C07C0039-04 [I,A]
 NCL 568/386.000
 ECLA C07C039/04

AB A cumene process of producing **phenol** and **acetone** comprises the joint oxidation of aldehydes and dimethylbenzene alc. by aqueous hydrogen peroxide solns. in the presence of 16-94 weight of **cumene hydroperoxide** by contacting of mutually insol. phases of the organic products from a cumene oxidation stage and hydrogen peroxide containing water with optional addition of acidic catalysts in a conversion reactor for the purpose of conversion of aldehydes into organic acids and dimethylbenzene alc. into **cumene hydroperoxide** and therefore significantly simplifying the process of fractionation of organic conversion products into high quality product **phenol** and product **acetone**.

ST cumene oxidn hydrogen peroxide acid catalyst
 IT **Ion exchangers**
 (Sulfanic; method of producing **cumene hydroperoxide, phenol** and **acetone**)

IT Zeolites (synthetic), uses
 RL: CAT (Catalyst use); USES (Uses)
 (acidic; method of producing **cumene hydroperoxide, phenol** and **acetone**)

IT Oxidation catalysts
 (method of producing **cumene hydroperoxide, phenol** and **acetone**)

IT **Sulfonic acids, uses**
 RL: CAT (Catalyst use); USES (Uses)
 (method of producing **cumene hydroperoxide, phenol** and **acetone**)

IT 98-83-9P, preparation
 RL: BYP (Byproduct); PREP (Preparation)
 (dimer; method of producing **cumene hydroperoxide, phenol** and **acetone**)

IT **80-15-9P** 80-43-3P, Dicumyl peroxide 98-86-2P, preparation 1300-71-6P
 RL: BYP (Byproduct); **RCT (Reactant)**; PREP (Preparation); **RACT (Reactant or reagent)**
 (method of producing **cumene hydroperoxide, phenol** and **acetone**)

IT 64-18-6, Formic acid, uses 64-19-7, Acetic acid, uses 65-85-0, Benzoic acid, uses 79-09-4, Propionic acid, uses 7446-09-5, **Sulfur dioxide**, uses 7601-90-3, Perchloric acid, uses 7647-01-0, Hydrochloric acid, uses 7664-38-2, Phosphoric acid, uses **7664-93-9, Sulfuric acid**, uses
 RL: CAT (Catalyst use); USES (Uses)
 (method of producing **cumene hydroperoxide, phenol** and **acetone**)

IT **67-64-1P, Acetone**, preparation
 RL: **IMF (Industrial manufacture)**; PREP (Preparation)
 (method of producing **cumene hydroperoxide, phenol** and **acetone**)

IT 98-82-8, Cumene
 RL: **RCT (Reactant)**; **RACT (Reactant or reagent)**
 (method of producing **cumene hydroperoxide, phenol** and **acetone**)

RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

- (1) Miki; US 4835325 A 1989 HCAPLUS
- (2) Nakagawa; US 4283570 A 1981 HCAPLUS
- (3) Ogino; US 4933506 A 1990 HCAPLUS
- (4) Wu; US 4849549 A 1989 HCAPLUS

IT 80-15-9P

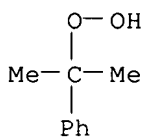
RL: BYP (Byproduct); RCT (Reactant); PREP (Preparation);

RACT (Reactant or reagent)

(method of producing **cumene hydroperoxide**,
phenol and **acetone**)

RN 80-15-9 HCAPLUS

CN Hydroperoxide, 1-methyl-1-phenylethyl (9CI) (CA INDEX NAME)



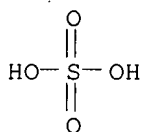
IT 7664-93-9, **Sulfuric acid**, uses

RL: CAT (Catalyst use); USES (Uses)

(method of producing **cumene hydroperoxide**,
phenol and **acetone**)

RN 7664-93-9 HCAPLUS

CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



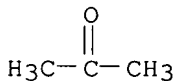
IT 67-64-1P, **Acetone**, preparation

RL: IMF (Industrial manufacture); PREP (Preparation)

(method of producing **cumene hydroperoxide**,
phenol and **acetone**)

RN 67-64-1 HCAPLUS

CN 2-Propanone (9CI) (CA INDEX NAME)



L78 ANSWER 4 OF 13 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2001:651046 HCAPLUS

DN 136:8028

ED Entered STN: 06 Sep 2001

TI Catalytic decomposition of **cumene hydroperoxide** into
phenol and **acetone**

AU Selvin, Rosilda; Rajarajeswari, G. R.; Selva Roselin, L.; Sadasivam, V.;
Sivasankar, B.; Rengaraj, K.

CS Department of Chemistry, Anna University, Chennai, 600025, India

jan delaval - 8 march 2006

- SO Applied Catalysis, A: General (2001), 219(1-2), 125-129
CODEN: ACAGE4; ISSN: 0926-860X
- PB Elsevier Science B.V.
- DT Journal
- LA English
- CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
Section cross-reference(s): 67
- AB The decomposition of **cumene hydroperoxide** (CHP) was carried out in a batch reactor over supported solid heteropolyacid catalysts on **H2SO4** activated montmorillonite K10 (M-K10) and metal-ion **-exchanged** M-K10, at 30-60°. The metal catalyst supports were prepared by wet impregnation of M-K10 with metal chloride solns. (Zn, Fe, La, Ce). Acid-activated supported dodecatungstophosphoric acid (DTPA) showed 100% conversion within 5 min at 30°; the products were **phenol** and **acetone**. The correlation of catalytic activity with acidity revealed that both Lewis and Bronsted acid sites promote the decomposition. The reaction was first-order with respect to CHP. The heterogeneous catalysts may be used instead of **sulfuric acid** for selective decomposition of CHP into **phenol** and **acetone** with 100% conversion.
- ST **sulfuric acid** activated montmorillonite catalyst
peroxide decompn; **cumene hydroperoxide** decompn
phenol acetone montmorillonite catalyst; metal exchanged
acid activated clay catalyst support activity; dodecatungstophosphoric
acid catalyst conversion **cumene hydroperoxide**
- IT Bronsted acidity
Catalyst supports
Decomposition catalysts
Lewis acidity
(acid modified clays and heteropolyacids as catalyst/support systems in
decomposition of **cumene hydroperoxide** into
phenol and **acetone**)
- IT Zeolite MCM-41
RL: CAT (Catalyst use); USES (Uses)
(catalyst support; acid modified clays and heteropolyacids as
catalyst/support systems in decomposition of **cumene
hydroperoxide** into **phenol** and **acetone**)
- IT 1343-93-7 7646-85-7, Zinc chloride, uses 7705-08-0, Ferric chloride,
uses 7790-86-5, Cerium chloride 10099-58-8, Lanthanum chloride
RL: CAT (Catalyst use); USES (Uses)
(acid modified clays and heteropolyacids as catalyst/support systems in
decomposition of **cumene hydroperoxide** into
phenol and **acetone**)
- IT 67-64-1P, Acetone, preparation 108-95-2P,
Phenol, preparation
RL: IMF (Industrial manufacture); PREP (Preparation)
(acid modified clays and heteropolyacids as catalyst/support systems in
decomposition of **cumene hydroperoxide** into
phenol and **acetone**)
- IT 80-15-9, Cumene hydroperoxide
RL: RCT (Reactant); RACT (Reactant or reagent)
(acid modified clays and heteropolyacids as catalyst/support systems in
decomposition of **cumene hydroperoxide** into
phenol and **acetone**)
- IT 7631-86-9, Silica, uses
RL: CAT (Catalyst use); USES (Uses)
(catalyst support; acid modified clays and heteropolyacids as
catalyst/support systems in decomposition of **cumene
hydroperoxide** into **phenol** and **acetone**)
- IT 1318-93-0, Montmorillonite, uses 7439-89-6, Iron, uses 7439-91-0,

Lanthanum, uses 7440-45-1, Cerium, uses 7440-66-6, Zinc, uses 7664-93-9, Sulfuric acid, uses

RL: CAT (Catalyst use); USES (Uses)

(support; acid modified clays and heteropolyacids as catalyst/support systems in decomposition of **cumene hydroperoxide** into **phenol** and **acetone**)

RE.CNT 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

- (1) Aboul-Gheit, A; Thermochim Acta 1987, V118 HCAPLUS
- (2) Barton, D; Tetrahedron Lett 1997, V38, P6351 HCAPLUS
- (3) Beck, J; J Am Chem Soc 1992, V114, P10834 HCAPLUS
- (4) Clark, J; Chem Soc Rev 1996, P303 HCAPLUS
- (5) Clark, J; J Chem Soc, Chem Commun 1989, P1353 HCAPLUS
- (6) Cornelis, A; Catal Lett 1990, V6, P103 HCAPLUS
- (7) Izumi, Y; J Catal 1983, V84, P402 HCAPLUS
- (8) Kharasch, M; J Org Chem 1950, V15, P748 HCAPLUS
- (9) Sasidharan, M; J Chem Res 1997, P52 HCAPLUS
- (10) Seubold, F; J Am Chem Soc 1953, V75, P3790 HCAPLUS
- (11) Theocharis, C; J Chem Soc, Faraday Trans 1988, V84, P1509 HCAPLUS
- (12) Vodnar, J; J Appl Catal A 1995, V122, P33 HCAPLUS

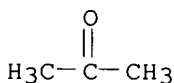
IT 67-64-1P, Acetone, preparation 108-95-2P, Phenol, preparation

RL: IMF (Industrial manufacture); PREP (Preparation)

(acid modified clays and heteropolyacids as catalyst/support systems in decomposition of **cumene hydroperoxide** into **phenol** and **acetone**)

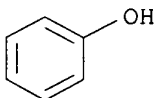
RN 67-64-1 HCAPLUS

CN 2-Propanone (9CI) (CA INDEX NAME)



RN 108-95-2 HCAPLUS

CN Phenol (8CI, 9CI) (CA INDEX NAME)



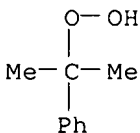
IT 80-15-9, Cumene hydroperoxide

RL: RCT (Reactant); RACT (Reactant or reagent)

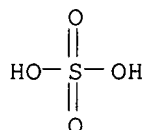
(acid modified clays and heteropolyacids as catalyst/support systems in decomposition of **cumene hydroperoxide** into **phenol** and **acetone**)

RN 80-15-9 HCAPLUS

CN Hydroperoxide, 1-methyl-1-phenylethyl (9CI) (CA INDEX NAME)



IT 7664-93-9, Sulfuric acid, uses
 RL: CAT (Catalyst use); USES (Uses)
 (support; acid modified clays and heteropolyacids as catalyst/support
 systems in decomposition of **cumene hydroperoxide** into
phenol and **acetone**)
 RN 7664-93-9 HCAPLUS
 CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



L78 ANSWER 5 OF 13 HCAPLUS COPYRIGHT 2006 ACS on STN
 AN 2001:450351 HCAPLUS
 DN 135:182344
 ED Entered STN: 22 Jun 2001
 TI Decomposition of cumene hydroperoxide catalyzed by resin catalysts. I.
 Catalyst properties
 AU Huang, Da-gang; Yu, Shi-ru; Han, Ming-han; Wang, Jin-fu; Jin, Yong
 CS Dep. Chem. Eng., Tsinghua Univ., Beijing, 100084, Peop. Rep. China
 SO Guocheng Gongcheng Xuebao (2001), 1(2), 197-201
 CODEN: CJPEB5; ISSN: 1009-606X
 PB Kexue Chubanshe
 DT Journal
 LA Chinese
 CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
 Section cross-reference(s): 38
 AB Comparing different **sulfonic** styrene-based resin catalysts, it
 was found that CT-175 has a higher activity and is suitable catalyst for
 the decomposition of cumene hydroperoxide. After the wet resin is dipped in
acetone for more than 80 min, nearly 100% water can be removed
 when the ratio of **acetone** to resin is 40 mug. The main reason
 of resin fragmentation is mech. stirring, so it is not suited for a
 reactor with a mech. stirrer. The deactivation of resin is caused by Na⁺
 in the resin, and the deactivated catalyst must be regenerated after the
 Na⁺ concentration is more than 3%. The optimal regeneration condition is room
 temperature and 3.5% (w) **H2SO4** solution by which more than 95% Na⁺
 in the resin can be removed.
 ST cumene hydroperoxide decompn catalyst styrenesulfonic **cationic**
exchange resin
 IT Catalysts
 (acidic **ion exchangers**; decomposition of cumene
 hydroperoxide catalyzed by acid **cationic exchange**
 resin catalysts)
 IT **Ion exchangers**
 (acidic, catalysts; decomposition of cumene hydroperoxide catalyzed by acid
cationic exchange resin catalysts)
 IT Decomposition catalysts
 Solvent effect
 (decomposition of cumene hydroperoxide catalyzed by acid **cationic**
exchange resin catalysts)
 IT Dehydration
 (effect of; decomposition of cumene hydroperoxide catalyzed by acid
cationic exchange resin catalysts)

IT 143351-93-3, Purolite CT 175 188132-53-8, Purolite CT 169 211365-90-1,
 Purolite CT 151 339304-39-1, Purolite CT 124
 RL: CAT (Catalyst use); USES (Uses)
 (decomposition catalyst; decomposition of cumene hydroperoxide catalyzed by
 acid **cationic exchange** resin catalysts)

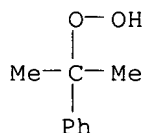
IT 80-15-9, Cumene hydroperoxide
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (decomposition of cumene hydroperoxide catalyzed by acid **cationic
 exchange** resin catalysts)

IT 67-64-1, **acetone**, uses 108-95-2, **phenol**, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (solvent; decomposition of cumene hydroperoxide catalyzed by acid
cationic exchange resin catalysts)

IT 7664-93-9, **Sulfuric acid**, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (treatment of catalyst; decomposition of cumene hydroperoxide catalyzed by
 acid **cationic exchange** resin catalysts)

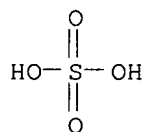
IT 80-15-9, Cumene hydroperoxide
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (decomposition of cumene hydroperoxide catalyzed by acid **cationic
 exchange** resin catalysts)

RN 80-15-9 HCAPLUS
 CN Hydroperoxide, 1-methyl-1-phenylethyl (9CI) (CA INDEX NAME)



IT 7664-93-9, **Sulfuric acid**, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (treatment of catalyst; decomposition of cumene hydroperoxide catalyzed by
 acid **cationic exchange** resin catalysts)

RN 7664-93-9 HCAPLUS
 CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



L78 ANSWER 6 OF 13 HCAPLUS COPYRIGHT 2006 ACS on STN
 AN 2000:475445 HCAPLUS
 DN 133:75969
 ED Entered STN: (14 Jul 2000)
 TI Multistep **ion exchange** for removal of acids in
phenol manufacture by acid-catalyzed cleavage of **cumene
 hydroperoxide**
 IN Pompetzki, Werner; Gerlich, Otto
 PA Phenolchemie G.m.b.H. & Co. K.-G., Germany
 SO Eur. Pat. Appl., 12 pp.
 CODEN: EPXXDW

DT Patent
 LA German
 IC ICM C07C0037-68
 CC 48-1 (Unit Operations and Processes)
 Section cross-reference(s): 45

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1018501	A1	20000712	EP 1999-124101	19991202
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	DE 19900387	A1	20000713	DE 1999-19900387	19990108
	JP 2000204054	A2	20000725	JP 1999-368992	19991227
	BG 104055	A	20010831	BG 2000-104055	20000104
	CN 1260342	A	20000719	CN 2000-101001	20000107
	KR 2000053418	A	20000825	KR 2000-661	20000107
	BR 2000000028	A	20000919	BR 2000-28	20000107
PRAI	DE 1999-19900387	A	19990108		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
EP 1018501	ICM	C07C0037-68
	IPCI	C07C0037-68 [ICM,6]
	IPCR	C07C0037-00 [I,C]; C07C0037-68 [I,A]; C07C0037-72 [I,A]
	ECLA	C07C037/68C; C07C037/72
DE 19900387	IPCI	C07C0027-26 [ICM,7]; C07C0045-78 [ICS,7]; C07C0045-53 [ICS,7]; C07C0037-68 [ICS,7]; C07C0037-08 [ICS,7]; C07C0049-08 [ICS,7]; C07C0039-04 [ICS,7]
	IPCR	C07C0037-00 [I,C]; C07C0037-68 [I,A]; C07C0037-72 [I,A]
	ECLA	C07C037/68C; C07C037/72
JP 2000204054	IPCI	C07C0037-68 [ICM,7]; B01J0038-00 [ICS,7]; C07C0039-04 [ICS,7]; C07C0045-78 [ICS,7]; C07C0049-08 [ICS,7]; C07B0061-00 [ICS,7]
BG 104055	IPCI	C07C0037-68 [ICM,7]
CN 1260342	IPCI	C07C0027-26 [ICM,6]
KR 2000053418	IPCI	C07C0027-26
BR 2000000028	IPCI	C07C0051-00 [ICM,7]

AB A process for removal of organic and/or inorg. acids from the crude product from acid-catalyzed cleavage of aralkyl hydroperoxides includes at least one extraction step followed by subsequent **ion exchange** of the organic phase and a distillation step. An aqueous phase containing organic acids,

resulting from the first **ion exchange** step and distillation step, is further treated in a second **ion exchange** step. The second **ion exchange** step is carried out in an **anion exchange** bed. The process is especially useful for the removal of organic and inorg. acids in **phenol** manufacture by the acid-catalyzed cleavage of **cumene hydroperoxide**.

ST **anion exchange** acid recovery **cumene hydroperoxide phenol**

IT **Ion exchange**

Ion exchangers

(multistep **ion exchange** for removal of acids in **phenol** manufacture by acid-catalyzed cleavage of **cumene hydroperoxide**)

IT **Anion exchangers**

(strongly basic; multistep **ion exchange** for removal of acids in **phenol** manufacture by acid-catalyzed cleavage of **cumene hydroperoxide**)

IT **Anion exchangers**

(weakly basic; multistep **ion exchange** for removal of acids in **phenol** manufacture by acid-catalyzed cleavage of **cumene hydroperoxide**)

IT 9049-93-8, Amberlyst A 21 208266-04-0, Amberjet 4400
 RL: NUU (Other use, unclassified); USES (Uses)
 (anion exchanger; multistep **ion exchange** for removal of acids in **phenol** manufacture by acid-catalyzed cleavage of **cumene hydroperoxide**)

IT 80-15-9, Cumene hydroperoxide
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (cleavage of; multistep **ion exchange** for removal of acids in **phenol** manufacture by acid-catalyzed cleavage of **cumene hydroperoxide**)

IT 67-64-1P, Acetone, preparation 108-95-2P, Phenol, preparation
 RL: IMF (Industrial manufacture); PREP (Preparation)
 (manufacture of; multistep **ion exchange** for removal of acids in **phenol** manufacture by acid-catalyzed cleavage of **cumene hydroperoxide**)

IT 64-18-6, Formic acid, processes 64-19-7, Acetic acid, processes
 RL: REM (Removal or disposal); PROC (Process)
 (removal of; multistep **ion exchange** for removal of acids in **phenol** manufacture by acid-catalyzed cleavage of **cumene hydroperoxide**)

RE.CNT 1 THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD
 RE
 (1) Societa Italiana Resine; FR 1302848 A 1963

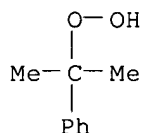
IT 9049-93-8, Amberlyst A 21
 RL: NUU (Other use, unclassified); USES (Uses)
 (anion exchanger; multistep **ion exchange** for removal of acids in **phenol** manufacture by acid-catalyzed cleavage of **cumene hydroperoxide**)

RN 9049-93-8 HCAPLUS
 CN Amberlyst A 21 (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

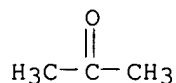
IT 80-15-9, Cumene hydroperoxide
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (cleavage of; multistep **ion exchange** for removal of acids in **phenol** manufacture by acid-catalyzed cleavage of **cumene hydroperoxide**)

RN 80-15-9 HCAPLUS
 CN Hydroperoxide, 1-methyl-1-phenylethyl (9CI) (CA INDEX NAME)

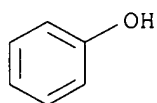


IT 67-64-1P, Acetone, preparation 108-95-2P, Phenol, preparation
 RL: IMF (Industrial manufacture); PREP (Preparation)
 (manufacture of; multistep **ion exchange** for removal of acids in **phenol** manufacture by acid-catalyzed cleavage of **cumene hydroperoxide**)

RN 67-64-1 HCAPLUS
 CN 2-Propanone (9CI) (CA INDEX NAME)



RN 108-95-2 HCAPLUS
 CN Phenol (8CI, 9CI) (CA INDEX NAME)



L78 ANSWER 7 OF 13 HCAPLUS COPYRIGHT 2006 ACS on STN
 AN 2000:412198 HCAPLUS
 DN 133:30577
 ED Entered STN: 21 Jun 2000
 TI Method for neutralizing crude **phenol** obtained by cumene method
 IN Kokubu, Yoshimitsu; Kitado, Shoji; Sezaki, Yoshihiro; Inomata, Masami;
 Nagamatsu, Shigeki
 PA Mitsui Petrochemical Industries, Co., Ltd., Japan
 SO Jpn. Kokai Tokkyo Koho, 6 pp.
 CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM C07C0037-82

ICS C07C0037-08; C07C0039-04

CC 25-10 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2000169410	A2	20000620	JP 1998-350318	19981209
PRAI	JP 1998-350318		19981209		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 2000169410	ICM	C07C0037-82
	ICS	C07C0037-08; C07C0039-04
	IPCI	C07C0037-82 [ICM,7]; C07C0037-08 [ICS,7]; C07C0039-04 [ICS,7]

AB Crude **phenol** solution containing mineral acid, which is obtained by acid-catalyzed cleavage of **cumene hydroperoxide**, is treated to neutralize the mineral acid with macroporous-type weakly basic **anion exchange** resin with average grain diameter of 0.15-1.5 mm and degree of grain diameter distribution uniformity of 1.0-1.4. The latter **anion exchanger** is durable for a long period of time and highly efficient for neutralizing and removing mineral acid without degradation of the **ion exchanger**. Thus, Lewatit MP-64 (6% degree of crosslinking and total exchange capacity of 1.5 mequiv./mL, Bayer Corp.) was shifted to obtain a macroporous-type weakly basic **anion exchange** having average diameter of 0.54 mm and grain diameter distribution uniformity of 1.2. The latter **ion exchanger** (13 mL) immersed in water was packed into a glass column (inner diameter 1.5 cm, height 7.5 cm) to which **acetone** was passed at SV 5 mL **acetone**/mL-IER/h for 1 h and then crude

phenol containing 490 ppm H₂SO₄, phenol 37.6, acetone 49.4, cumene 8.4%, etc. at SV 10 mL-crude phenol /mL-IER/h to give an effluent containing ≥2 ppm.

ST crude phenol neutralization; macroporous type weakly anion exchanger

IT Anion exchangers
Neutralization
(neutralization of mineral acid-containing crude phenol by macroporous-type weakly basic anion exchange resin)

IT 108-95-2P, Phenol, preparation
RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PUR (Purification or recovery); PREP (Preparation); PROC (Process)
(neutralization of mineral acid-containing crude phenol by macroporous-type weakly basic anion exchange resin)

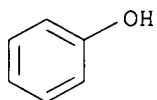
IT 80-15-9, Cumene hydroperoxide 39433-45-9, Lewatit MP-64
RL: RCT (Reactant); RACT (Reactant or reagent)
(neutralization of mineral acid-containing crude phenol by macroporous-type weakly basic anion exchange resin)

IT 7664-93-9, Sulfuric acid, processes
RL: REM (Removal or disposal); PROC (Process)
(neutralization of mineral acid-containing crude phenol by macroporous-type weakly basic anion exchange resin)

IT 108-95-2P, Phenol, preparation
RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PUR (Purification or recovery); PREP (Preparation); PROC (Process)
(neutralization of mineral acid-containing crude phenol by macroporous-type weakly basic anion exchange resin)

RN 108-95-2 HCAPLUS

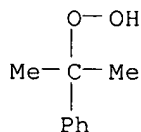
CN Phenol (8CI, 9CI) (CA INDEX NAME)



IT 80-15-9, Cumene hydroperoxide
RL: RCT (Reactant); RACT (Reactant or reagent)
(neutralization of mineral acid-containing crude phenol by macroporous-type weakly basic anion exchange resin)

RN 80-15-9 HCAPLUS

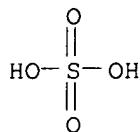
CN Hydroperoxide, 1-methyl-1-phenylethyl (9CI) (CA INDEX NAME)



IT 7664-93-9, Sulfuric acid, processes
RL: REM (Removal or disposal); PROC (Process)
(neutralization of mineral acid-containing crude phenol by macroporous-type weakly basic anion exchange resin)

RN 7664-93-9 HCAPLUS

CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



L78 ANSWER 8 OF 13 HCAPLUS COPYRIGHT 2006 ACS on STN
 AN 2000:96125 HCAPLUS
 DN 132:109758
 ED Entered STN: 10 Feb 2000
 TI Procedure for the removal of organic and/or inorganic acids from the organic reaction phase via contact with **anion exchangers** and extraction
 IN Pompetzki, Werner; Gerlich, Otto
 PA Phenolchemie Gmbh & Co. Kg, Germany
 SO Ger. Offen., 6 pp.
 CODEN: GWXXBX
 DT Patent
 LA German
 IC ICM C07B0063-00
 ICS C07C0407-00; C07C0409-02; B01D0011-04; B01D0015-04
 CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
 Section cross-reference(s): 48

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 19900382	A1	20000210	DE 1999-19900382	19990108
	EP 979811	A1	20000216	EP 1999-114766	19990728
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	MX 9907050	A	20000930	MX 1999-7050	19990729
	JP 2000086540	A2	20000328	JP 1999-219228	19990802
	KR 2000017066	A	20000325	KR 1999-31943	19990804
	BR 9903418	A	20010821	BR 1999-3418	19990804
	CN 1247850	A	20000322	CN 1999-111963	19990805
PRAI	DE 1998-19835306	A1	19980805		
	DE 1999-19900382	A	19990108		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
DE 19900382	ICM	C07B0063-00
	ICS	C07C0407-00; C07C0409-02; B01D0011-04; B01D0015-04
	IPCI	C07B0063-00 [ICM,6]; C07C0407-00 [ICS,6]; C07C0409-02 [ICS,6]; B01D0011-04 [ICS,6]; B01D0015-04 [ICS,6]
	IPCR	C07B0063-00 [I,A]; C07B0063-00 [I,C]; C07C0045-00 [I,C]; C07C0045-53 [I,A]; C07C0045-79 [I,A]; C07C0045-80 [I,A]
	ECLA	C07B063/00; C07C045/53; C07C045/53+49/08; C07C045/79; C07C045/80
EP 979811	IPCI	C07C0045-53 [ICM,6]; C07C0045-80 [ICS,6]; C07C0045-79 [ICS,6]; C07C0037-08 [ICS,6]; C07C0037-72 [ICS,6]; C07C0037-82 [ICS,6]
	ECLA	C07B063/00; C07C045/53; C07C045/53+49/08; C07C045/79; C07C045/80
MX 9907050	IPCI	C07C0409-10 [ICM,5]

jan delaval - 8 march 2006

JP 2000086540 IPCI C07B0063-00 [ICM,7]; C07B0063-00 [ICS,7]; C07C0407-00 [ICS,7]; C07C0409-08 [ICS,7]; C07C0409-10 [ICS,7]

KR 2000017066 IPCI B01D0011-04 [ICM,7]

BR 9903418 IPCI C07C0409-10 [ICM,7]; C07C0407-00 [ICS,7]; B01D0011-04 [ICS,7]

CN 1247850 IPCI C07C0037-08 [ICM,7]; C07C0037-80 [ICS,7]; C07C0037-82 [ICS,7]; C07C0045-53 [ICS,7]; C07C0045-83 [ICS,7]; C07C0045-85 [ICS,7]; C07C0027-34 [ICS,7]; C07C0027-00 [ICS,7]

AB A procedure for the removal of organic and/or inorg. acids (e.g., **sulfuric acid**) from organic phases via contact with **anion exchangers** and extraction is described. This used in the removal of organic and/or inorg. acids from the fission product phase resulting during **phenol** production by acid-catalyzed splitting of **cumene hydroperoxide**.

ST inorg acid removal org phase **anion exchanger**;
sulfuric acid removal **anion exchanger**
; acid removal org phase **anion exchanger**

IT Acids, processes
RL: REM (Removal or disposal); PROC (Process)
(inorg.; procedure for the removal of organic and/or inorg. acids from the organic reaction phase via contact with **anion exchangers** and extraction)

IT Acids, processes
RL: REM (Removal or disposal); PROC (Process)
(organic; procedure for the removal of organic and/or inorg. acids from the organic reaction phase via contact with **anion exchangers** and extraction)

IT **Anion exchangers**
Extraction
(procedure for the removal of organic and/or inorg. acids from the organic reaction phase via contact with **anion exchangers** and extraction)

IT 7732-18-5, Water, uses
RL: NUU (Other use, unclassified); USES (Uses)
(procedure for the removal of organic and/or inorg. acids from the organic reaction phase via contact with **anion exchangers** and extraction)

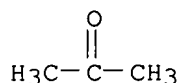
IT **67-64-1P, Acetone, preparation 108-95-2P, Phenol, preparation**
RL: PUR (Purification or recovery); PREP (Preparation)
(procedure for the removal of organic and/or inorg. acids from the organic reaction phase via contact with **anion exchangers** and extraction)

IT **80-15-9D, Cumene hydroperoxide, acidic cleavage products 7664-93-9, Sulfuric acid, processes**
RL: REM (Removal or disposal); PROC (Process)
(procedure for the removal of organic and/or inorg. acids from the organic reaction phase via contact with **anion exchangers** and extraction)

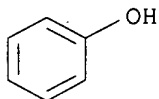
IT **67-64-1P, Acetone, preparation 108-95-2P, Phenol, preparation**
RL: PUR (Purification or recovery); PREP (Preparation)
(procedure for the removal of organic and/or inorg. acids from the organic reaction phase via contact with **anion exchangers** and extraction)

RN 67-64-1 HCAPLUS

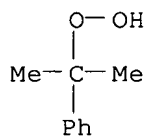
CN 2-Propanone (9CI) (CA INDEX NAME)



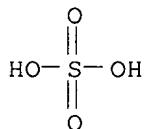
RN 108-95-2 HCAPLUS
 CN Phenol (8CI, 9CI) (CA INDEX NAME)



IT **80-15-9D, Cumene hydroperoxide, acidic cleavage products 7664-93-9, Sulfuric acid, processes**
 RL: **REM (Removal or disposal); PROC (Process)**
 (procedure for the removal of organic and/or inorg. acids from the organic reaction phase via contact with **anion exchangers** and extraction)
 RN 80-15-9 HCAPLUS
 CN Hydroperoxide, 1-methyl-1-phenylethyl (9CI) (CA INDEX NAME)



RN 7664-93-9 HCAPLUS
 CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



L78 ANSWER 9 OF 13 HCAPLUS COPYRIGHT 2006 ACS on STN
 AN 1990:531728 HCAPLUS
 DN 113:131728
 ED Entered STN: 13 Oct 1990
 TI Heteropoly acid and **sulfonated ion exchange** resin catalysts for production of **phenol** and **acetone** from **cumene hydroperoxide**
 IN Knifton, John F.; Sanderson, John R.
 PA Texaco Chemical Co., USA
 SO U.S., 8 pp.
 CODEN: USXXAM
 DT Patent
 LA English
 IC ICM C07C0037-08

ICS C07C0045-53
 INCL 568798000
 CC 25-10 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds)
 FAN.CNT 4

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 4898995	A	19900206	US 1988-261817	19881024
	EP 367408	A2	19900509	EP 1989-310111	19891003
	EP 367408	A3	19910612		
	R: DE, FR, GB, IT				
	JP 02169529	A2	19900629	JP 1989-275103	19891024
PRAI	US 1988-261817	A	19881024		
	US 1988-261818	A	19881024		
	US 1988-261819	A	19881024		
	US 1989-324118	A	19890317		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
US 4898995	ICM	C07C0037-08
	ICS	C07C0045-53
	INCL	568798000
	IPCI	C07C0037-08 [ICM,4]; C07C0045-53 [ICS,4]
	IPCR	B01J0031-06 [I,C]; B01J0031-10 [I,A]; C07C0037-00 [I,C]; C07C0037-08 [I,A]; C07C0045-00 [I,C]; C07C0045-53 [I,A]
EP 367408	NCL	568/798.000; 568/485.000; 568/741.000; 568/768.000
	IPCI	C07C0045-53 [ICM,5]; C07C0049-08 [ICS,5]
	IPCR	B01J0031-06 [I,C]; B01J0031-10 [I,A]; C07C0037-00 [I,C]; C07C0037-08 [I,A]; C07C0045-00 [I,C]; C07C0045-53 [I,A]
JP 02169529	IPCI	C07C0039-04 [ICM,5]; B01J0021-16 [ICS,5]; B01J0023-24 [ICS,5]; B01J0027-18 [ICS,5]; B01J0031-10 [ICS,5]; C07C0027-00 [ICS,5]; C07C0037-08 [ICS,5]; C07C0045-53 [ICS,5]; C07C0049-08 [ICS,5]; C07B0061-00 [ICA,5]; C07C0027-12 [ICA,5]

OS CASREACT 113:131728

AB PhOH and Me2CO are prepared simultaneously by decomposition of PhCMe2OOH (I) over

a heteropoly acid or a **sulfonated ion exchange** resin catalyst. A mixture of 60.0 g Me2CO and 5.0 g H3PW12O40 on TiO2 (preparation given) was refluxed, 40.0 g 80% I was added dropwise at $\leq 80^\circ$, and the mixture was refluxed to give Me2CO 70.9, PhOH 19.6, cumene 6.7, PhCMe:CH2 1.4, mesityl oxide 0.3, and PhCMe2OH 0.3 weight% with a quant. conversion of I. Also used were molybdophosphoric acid on TiO2, molybdosilicic acid on TiO2, tungstosilicic acid on TiO2, Amberlyst XN-1010, and Amberlite IR-118.

ST decompn **cumene hydroperoxide** heteropoly acid;

acetone simultaneous prodn **phenol**; **ion**

exchange resin decompn catalyst

IT Heteropoly acids

RL: CAT (Catalyst use); USES (Uses)

(catalysts, for decomposition of **cumene hydroperoxide**)

IT **Ion exchangers**

(catalysts, **sulfonated**, for decomposition of **cumene hydroperoxide**)

IT 1343-93-7, 12 Tungstophosphoric acid 11104-88-4, Molybdophosphoric acid

11104-89-5, Molybdosilicic acid 51108-82-8, Amberlite IR 118

54991-00-3, Amberlyst XN-1010 113857-50-4, Tungstosilicic acid

RL: CAT (Catalyst use); USES (Uses)

(catalyst, for decomposition of **cumene hydroperoxide**)

IT 80-15-9, Cumene hydroperoxide
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (decomposition of, acetone and phenol from)

IT 98-82-8P, Cumene 98-83-9P, α Methylstyrene, preparation
 RL: FORM (Formation, nonpreparative); PREP (Preparation)
 (formation of, in decomposition of cumene hydroperoxide)

IT 108-95-2P, Phenol, preparation
 RL: PREP (Preparation)
 (simultaneous production of, with acetone, from cumene hydroperoxide, catalysts for)

IT 67-64-1P, Acetone, preparation
 RL: PREP (Preparation)
 (simultaneous production of, with phenol, from cumene hydroperoxide, catalysts for)

IT 54991-00-3, Amberlyst XN 1010
 RL: CAT (Catalyst use); USES (Uses)
 (catalyst, for decomposition of cumene hydroperoxide)

RN 54991-00-3 HCAPLUS

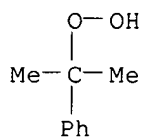
CN Amberlyst XN 1010 (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT 80-15-9, Cumene hydroperoxide
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (decomposition of, acetone and phenol from)

RN 80-15-9 HCAPLUS

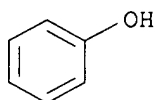
CN Hydroperoxide, 1-methyl-1-phenylethyl (9CI) (CA INDEX NAME)



IT 108-95-2P, Phenol, preparation
 RL: PREP (Preparation)
 (simultaneous production of, with acetone, from cumene hydroperoxide, catalysts for)

RN 108-95-2 HCAPLUS

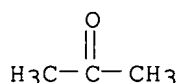
CN Phenol (8CI, 9CI) (CA INDEX NAME)



IT 67-64-1P, Acetone, preparation
 RL: PREP (Preparation)
 (simultaneous production of, with phenol, from cumene hydroperoxide, catalysts for)

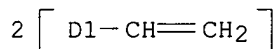
RN 67-64-1 HCAPLUS

CN 2-Propanone (9CI) (CA INDEX NAME)

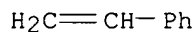


L78 ANSWER 10 OF 13 HCAPLUS COPYRIGHT 2006 ACS on STN
 AN 1988:22960 HCAPLUS
 DN 108:22960
 ED Entered STN: 23 Jan 1988
 TI Reaction of **sulfonic** groups linked to polymers and oxygenated compounds. IV. Effect of some characteristics of catalysts in heterolysis of **cumene hydroperoxide**
 AU Iditoiu, Cornelia
 CS Inst. Politeh., Fac. Tehnol. Chim., Timisoara, Rom.
 SO Revistade Chimie (Bucharest, Romania) (1987), 38(6), 480-3
 CODEN: RCBUAU; ISSN: 0034-7752
 DT Journal
 LA Romanian
 CC 38-3 (Plastics Fabrication and Uses)
 Section cross-reference(s): 25, 37
 AB The kinetic pos. influence of the average diameter growth of the pores on the overall catalytic activity in the heterolysis reaction of the **cumene hydroperoxide** (I) for a series of macroreticular and macroporous **sulfonated** divinylbenzene-styrene copolymer **cation exchangers** was emphasized. For nonporous **sulfonated cation exchangers**, the initial catalytic activity was improved by decreasing the crosslinking degree of the polymer matrix. After the selection of the conditions of removing the influence of the diffusion factors in the I heterolysis kinetics on **cation exchangers**, a nonlinear dependence of the specific activity on the ionic active group concentration was observed
 ST **cumene hydroperoxide** heterolysis; **sulfonic cation exchanger** heterolysis catalyst; **sulfonated** divinylbenzene styrene copolymer
 IT **Cation exchangers**
 (**sulfonated** divinylbenzene-styrene copolymers, catalysts, for heterolysis of **cumene hydroperoxide**)
 IT Decomposition catalysts
 (**sulfonated** divinylbenzene-styrene copolymers, for **cumene hydroperoxide** to **phenol** and **acetone**)
 IT 9003-70-7D, Divinylbenzene-styrene copolymer, **sulfonated**
 9037-24-5, Amberlyst 15 9056-03-5, Dowex 50WX12 9063-60-9,
 Vionit CS3 11113-61-4, Dowex 50WX4 11119-67-8, Dowex 50WX8
 12612-37-2, Dowex 50WX2 51609-15-5 **54991-00-3**, Amberlyst
 XN1010 58739-81-4, Vionit CS21 58739-82-5, Vionit CS22 59233-23-7,
 Amberlyst XN1008 74315-51-8, Vionit CS32 75026-61-8, Vionit CS31
 82853-04-1, Rexyn 101
 RL: CAT (Catalyst use); USES (Uses)
 (catalysts, for decomposition of **cumene hydroperoxide**)
 IT 80-15-9, **Cumene hydroperoxide**
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (decomposition of, to **phenol** and **acetone**,
 sulfonated divinylbenzene-styrene copolymer heterolysis
 catalysts for)
 IT 67-64-1P, **Acetone**, preparation 108-95-2P,
Phenol, preparation
 RL: SPN (Synthetic preparation); PREP (Preparation)

(preparation of, by decomposition of **cumene hydroperoxide**,
sulfonated divinylbenzene-styrene copolymer catalysts for)
 IT 9003-70-7D, Divinylbenzene-styrene copolymer, **sulfonated**
 9037-24-5, Amberlyst 15 54991-00-3, Amberlyst XN1010
 RL: CAT (Catalyst use); USES (Uses)
 (catalysts, for decomposition of **cumene hydroperoxide**)
 RN 9003-70-7 HCAPLUS
 CN Benzene, diethenyl-, polymer with ethenylbenzene (9CI) (CA INDEX NAME)
 CM 1
 CRN 1321-74-0
 CMF C10 H10
 CCI IDS

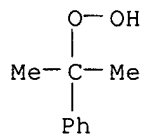


CM 2
 CRN 100-42-5
 CMF C8 H8

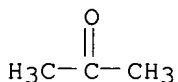


RN 9037-24-5 HCAPLUS
 CN Amberlyst 15 (9CI) (CA INDEX NAME)
 *** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
 RN 54991-00-3 HCAPLUS
 CN Amberlyst XN 1010 (9CI) (CA INDEX NAME)

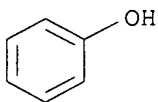
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
 IT 80-15-9, **Cumene hydroperoxide**
 RL: **RCT (Reactant); RACT (Reactant or reagent)**
 (decomposition of, to **phenol** and **acetone**,
sulfonated divinylbenzene-styrene copolymer heterolysis
 catalysts for)
 RN 80-15-9 HCAPLUS
 CN Hydroperoxide, 1-methyl-1-phenylethyl (9CI) (CA INDEX NAME)



IT 67-64-1P, Acetone, preparation 108-95-2P,
 Phenol, preparation
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (preparation of, by decomposition of cumene hydroperoxide,
 sulfonated divinylbenzene-styrene copolymer catalysts for)
 RN 67-64-1 HCAPLUS
 CN 2-Propanone (9CI) (CA INDEX NAME)



RN 108-95-2 HCAPLUS
 CN Phenol (8CI, 9CI) (CA INDEX NAME)



L78 ANSWER 11 OF 13 HCAPLUS COPYRIGHT 2006 ACS on STN
 AN 1987:438893 HCAPLUS
 DN 107:38893
 ED Entered STN: 08 Aug 1987
 TI Interactions between polymer-bound **sulfonate** (-SO₃H) groups and
 oxygenated compounds. V. The cumene hydroperoxide (CHP) heterolysis
 investigated by isotopic tracers
 AU Iditoiu, Cornelia; Nutiu, Maria
 CS Rom.
 SO Buletinul Stiintific si Tehnic al Institutului Politehnic Traian Vuia
 Timisoara, Seria Chimie (1986), 31(1-2), 39-44
 CODEN: BTICBN; ISSN: 0378-9675
 DT Journal
 LA English
 CC 22-4 (Physical Organic Chemistry)
 AB The mechanism of V. A. Susunov et al. (1958) for the homogeneous
 acid-catalyzed heterolysis of cumene hydroperoxide (I) to PhOH and Me₂CO
 was not valid for the reaction when catalyzed by Amberlyst 15, as shown by
 anhydrous cumene deuteriohydroperoxide hydrolysis, the kinetic isotope effect, and
 I heterolysis in the presence of H₂¹⁸O.
 ST disproportionation mechanism cumene hydroperoxide; kinetics
 disproportionation cumene hydroperoxide; isotope effect disproportionation
 kinetics; **cation exchanger** catalyst disproportionation
 IT Disproportionation catalysts
 (cation exchangers, for cumene hydroperoxide,
 mechanism of action of)
 IT Isotope effect
 (in kinetics of disproportionation of cumene hydroperoxide in presence
 of **cation exchanger**)
 IT Kinetics of disproportionation
 (of cumene hydroperoxide in presence of **cation**
exchanger, isotope effect in)
 IT Disproportionation
 (of cumene hydroperoxide to **phenol** and **acetone**, in

presence of **cation exchanger**, mechanism of)

IT **Cation exchangers**
(catalysts, for disproportionation of cumene hydroperoxide, mechanism in relation to)

IT **9037-24-5**, Amberlyst 15
RL: CAT (Catalyst use); USES (Uses)
(catalyst, for disproportionation of cumene hydroperoxide, mechanism in relation to)

IT 14314-42-2
RL: PRP (Properties)
(disproportionation of cumene hydroperoxide in presence of **cation exchanger** and)

IT 51764-28-4
RL: RCT (Reactant); RACT (Reactant or reagent)
(disproportionation of, in presence of **cation exchanger**)

IT **80-15-9**, Cumene hydroperoxide
RL: **RCT (Reactant); RACT (Reactant or reagent)**
(disproportionation of, in presence of **cation exchanger**, mechanism of)

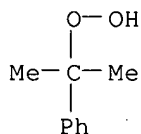
IT **9037-24-5**, Amberlyst 15
RL: CAT (Catalyst use); USES (Uses)
(catalyst, for disproportionation of cumene hydroperoxide, mechanism in relation to)

RN 9037-24-5 HCAPLUS
CN Amberlyst 15 (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT **80-15-9**, Cumene hydroperoxide
RL: **RCT (Reactant); RACT (Reactant or reagent)**
(disproportionation of, in presence of **cation exchanger**, mechanism of)

RN 80-15-9 HCAPLUS
CN Hydroperoxide, 1-methyl-1-phenylethyl (9CI) (CA INDEX NAME)



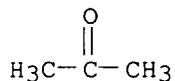
L78 ANSWER 12 OF 13 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 1980:198048 HCAPLUS
DN 92:198048
ED Entered STN: 12 May 1984
TI Decomposition of (hydroperoxyisopropyl)benzene on **ion exchangers**
AU Krupkova, H.; Fancovic, K.; Hrusovsky, M.
CS Slovnaft, n. p., Bratislava, Czech.
SO Petrochemia (1979), 19(4), 130-6
CODEN: PTCMB7; ISSN: 0370-2154
DT Journal
LA Slovak
CC 25-10 (Noncondensed Aromatic Compounds)
Section cross-reference(s): 22
AB Strongly acidic **cation-exchange** resins (e.g., 5% Ostion KSP 2010, 1% Amberlyst 15 and 5% Wofatit OK 80) catalyzed PhCMe2OOH

decomposition to PhOH and Me₂CO at 50° with 98% selectivity. The activation energy for the decomposition increase in the stated order of catalysts.

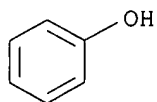
- ST **cation exchanger** catalyst decompn hydroperoxide;
cumene hydroperoxide decompn catalyst; **phenol**
 prodn catalyst **cation exchanger**; **acetone**
 prodn catalyst **cation exchanger**
- IT Thermal decomposition catalysts
 (acidic **cation exchangers**, for **cumene**
hydroperoxide)
- IT Aluminosilicates, uses and miscellaneous
 RL: CAT (Catalyst use); USES (Uses)
 (catalysts, for thermal decomposition of **cumene**
hydroperoxide)
- IT Kinetics of thermal decomposition
 (of **cumene hydroperoxide** in presence of
cation exchanger)
- IT **Cation exchangers**
 (acidic, catalysts, for thermal decomposition of **cumene**
hydroperoxide)
- IT 7664-38-2, uses and miscellaneous 9037-24-5 50815-51-5
 69522-07-2 73612-51-8
 RL: CAT (Catalyst use); USES (Uses)
 (catalysts, for thermal decomposition of **cumene**
hydroperoxide)
- IT 67-64-1P, preparation 108-95-2P, preparation
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (preparation of, by thermal decomposition of **cumene**
hydroperoxide, **cation exchanger** catalysts
 for)
- IT 80-15-9
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (thermal decomposition of, **cation exchanger** catalysts
 for)
- IT 9037-24-5
 RL: CAT (Catalyst use); USES (Uses)
 (catalysts, for thermal decomposition of **cumene**
hydroperoxide)
- RN 9037-24-5 HCAPLUS
 CN Amberlyst 15 (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

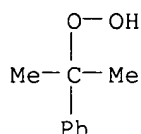
- IT 67-64-1P, preparation 108-95-2P, preparation
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (preparation of, by thermal decomposition of **cumene**
hydroperoxide, **cation exchanger** catalysts
 for)
- RN 67-64-1 HCAPLUS
 CN 2-Propanone (9CI) (CA INDEX NAME)



- RN 108-95-2 HCAPLUS
 CN Phenol (8CI, 9CI) (CA INDEX NAME)



IT 80-15-9
 RL: **RCT (Reactant); RACT (Reactant or reagent)**
 (thermal decomposition of, **cation exchanger** catalysts
 for)
 RN 80-15-9 HCAPLUS
 CN Hydroperoxide, 1-methyl-1-phenylethyl (9CI) (CA INDEX NAME)



L78 ANSWER 13 OF 13 HCAPLUS COPYRIGHT 2006 ACS on STN
 AN 1976:152737 HCAPLUS
 DN 84:152737
 ED Entered STN: 12 May 1984
 TI Neutralization on **anion exchangers** of a mixture of
 phenol and acetone obtained from acid decomposition of **cumene**
hydroperoxide
 AU Bogdaniak-Sulinska, Wanda
 CS Inst. Chem. Przem., Warsaw, Pol.
 SO Przemysl Chemiczny (1976), 55(2), 83-5
 CODEN: PRCHAB; ISSN: 0033-2496
 DT Journal
 LA Polish
 CC 48-8 (Unit Operations and Processes)
 Section cross-reference(s): 23, 25
 AB Amberlysts A-21 and A-27, Wofatits AK-40, AD-41, ES, and Y-11, and Varion
 AT-300 were tested. By following a specific operating procedure, optimum
 neutralization results were obtained with Wofatit AD-41.
 ST neutralization **anion exchanger**; phenol neutralization
anion exchanger; acetone neutralization **anion**
exchanger
 IT Neutralization
 (by **anion exchange**, of acetone-phenol mixture from
cumene hydroperoxide decomposition)
 IT **Anion exchange**
 (neutralization by, of acetone-phenol mixture from **cumene**
hydroperoxide decomposition)
 IT **9049-93-8** 9074-22-0 37311-41-4 39342-63-7 39429-11-3
 59113-21-2 59113-30-3
 RL: USES (Uses)
 (in neutralization, of acetone-phenol mixture from **cumene**
hydroperoxide decomposition)
 IT **67-64-1P**, preparation **108-95-2P**, preparation
 RL: **PREP (Preparation)**
 (manufacture of, from **cumene hydroperoxide**,
 neutralization by **anion exchange** in)
 IT **9049-93-8**
 RL: USES (Uses)

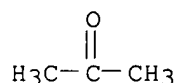
(in neutralization, of acetone-phenol mixture from **cumene hydroperoxide** decomposition)

RN 9049-93-8 HCAPLUS
CN Amberlyst A 21 (9CI) (CA INDEX NAME)

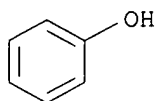
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT **67-64-1P**, preparation **108-95-2P**, preparation
RL: **PREP (Preparation)**
(manufacture of, from **cumene hydroperoxide**,
neutralization by **anion exchange** in)

RN 67-64-1 HCAPLUS
CN 2-Propanone (9CI) (CA INDEX NAME)



RN 108-95-2 HCAPLUS
CN Phenol (8CI, 9CI) (CA INDEX NAME)



=> => d all hitstr 181

L81 ANSWER 1 OF 1 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2003:737706 HCAPLUS
DN 139:262465
ED Entered STN: 19 Sep 2003
TI **Cumene hydroperoxide** and its production
IN **Codignola, Franco**
PA **Eurotecnica Development & Licensing S.P.A., Italy**
SO PCT Int. Appl., 27 pp.
CODEN: PIXXD2
DT Patent
LA English
IC ICM C07C0045-53
ICS C07C0409-10; C07C0037-08
CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
Section cross-reference(s): 25, 38

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003076381	A1	20030918	WO 2002-IT157	20020314
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB,				

jan delaval - 8 march 2006

GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA,
GN, GQ, GW, ML, MR, NE, SN, TD, TG

AU 2002247980	A1	20030922	AU 2002-247980	20020314
US 2006014985	A1	20060119	US 2005-507227	20050511
PRAI WO 2002-IT157	A	20020314		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
WO 2003076381	ICM	C07C0045-53
	ICS	C07C0409-10; C07C0037-08
	IPCI	C07C0045-53 [ICM,7]; C07C0409-10 [ICS,7]; C07C0037-08 [ICS,7]
	IPCR	C07C0037-00 [I,C]; C07C0037-08 [I,A]; C07C0045-00 [I,C]; C07C0045-53 [I,A]; C07C0409-00 [I,C]; C07C0409-10 [I,A]
AU 2002247980	IPCI	C07C0045-53 [ICM,7]; C07C0409-10 [ICS,7]; C07C0037-08 [ICS,7]
US 2006014985	IPCI	C07C0041-50 [I,A]; C07C0409-00 [I,A]
	NCL	568/558.000

OS CASREACT 139:262465

AB **Cumene hydroperoxide** is produced by oxidizing cumene with oxygen or air, whereby this process is run in the presence of a basic medium insol. in the reaction environment, and such as not to release inorg. cations to the reaction environment. Such a basic medium is preferably a crosslinked 4-vinylpyridine resin. The **cumene hydroperoxide** thus obtained is free or inorg. cations and has a reduced dimethylphenylcarbinol content compared to products of the prior art. An example was given which used Reillex 402 resin.

ST **cumene hydroperoxide** prodn vinylpyridine resin catalyst

IT Peroxidation catalysts
(hydroperoxidn.; production of **cumene hydroperoxide** from cumene in presence of vinylpyridine resin catalyst)

IT 9017-40-7, Reillex 402 125200-80-8, Reillex HPQ 128452-02-8
145380-06-9, Reillex HP 601473-45-4, Reillex 402I
RL: CAT (Catalyst use); EPR (Engineering process); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(production of **cumene hydroperoxide** from cumene in presence of vinylpyridine resin catalyst)

IT **80-15-9P, Cumene hydroperoxide**
RL: EPR (Engineering process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process)
(production of **cumene hydroperoxide** from cumene in presence of vinylpyridine resin catalyst)

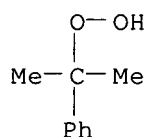
IT 98-82-8, Cumene
RL: EPR (Engineering process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(production of **cumene hydroperoxide** from cumene in presence of vinylpyridine resin catalyst)

IT 617-94-7P, Dimethylphenylcarbinol
RL: BYP (Byproduct); EPR (Engineering process); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process)
(reduced formation of; in production of **cumene hydroperoxide** from cumene in presence of vinylpyridine resin catalyst)

RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD

- RE
- (1) Franco, C; US 3171860 A 1965
 - (2) Michel, Q; WO 9504717 A 1995 HCAPLUS

(3) Sir Soc Italiana Resine Spa; GB 970945 A 1964 HCAPLUS
IT 80-15-9P, Cumene hydroperoxide
RL: EPR (Engineering process); IMF (Industrial manufacture); PEP
(Physical, engineering or chemical process); PREP (Preparation); PROC
(Process)
(production of cumene hydroperoxide from cumene in
presence of vinylpyridine resin catalyst)
RN 80-15-9 HCAPLUS
CN Hydroperoxide, 1-methyl-1-phenylethyl (9CI) (CA INDEX NAME)



=> => fil wpix

FILE 'WPIX' ENTERED AT 14:14:56 ON 08 MAR 2006
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FILE LAST UPDATED: 2 MAR 2006 <20060302/UP>
MOST RECENT DERWENT UPDATE: 200615 <200615/DW>
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FOR FURTHER DETAILS:
<http://scientific.thomson.com/support/products/dwpifv/>

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PLEASE CHECK:
<http://scientific.thomson.com/support/patents/dwpioref/reftools/classification>

>>> PLEASE BE AWARE OF THE NEW IPC REFORM IN 2006, SEE
http://www.stn-international.de/stndatabases/details/ipc_reform.html and
<http://scientific.thomson.com/media/scpdf/ipcrdwpi.pdf> <<<
'BI ABEX' IS DEFAULT SEARCH FIELD FOR 'WPIX' FILE

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L130 ANSWER 1 OF 6 WPIX COPYRIGHT 2006 THE THOMSON CORP on STN
AN 2005-640763 [66] WPIX
DNC C2005-192951
TI Process for synthesizing phenol and acetone.

jan delaval - 8 march 2006

DC A14 A41 E17
 IN KODINIOLA, F
 PA (EURO-N) EUROTECNICA CONTRACTORS & ENGINEERS SPA
 CYC 1
 PI CN 1620412 A 20050525 (200566)* C07C037-08 <--
 ADT CN 1620412 A CN 2002-828294 20020314
 PRAI CN 2002-828294 20020314
 IC ICM C07C037-08
 ICS B01J019-00; B01J031-10; C07C039-04;
 C07C045-53; C07C049-08
 AB CN 1620412 A UPAB: 20051014
 NOVELTY - This invention refers to a process for the synthesis of
phenol and **acetone** starting from **cumene**
hydroperoxide, and to a plant specifically developed for
 performing this process. More in particular, this invention refers to a
 process for the synthesis of **phenol** and **acetone**
 starting from **cumene hydroperoxide**, comprising the
 following steps: a) Pretreating of the starting **cumene**
hydroperoxide with acidic resins, to obtain **cumene**
hydroperoxide free of inorganic cations; b) Decomposing of the
cumene hydroperoxide from of inorganic cations
 originating from the step (a) in the presence of acidic resins, to yield
phenol and **acetone**.
 Dwg.0/0
 FS CPI
 FA AB
 MC CPI: A01-E13; E10-E02B1; E10-F02B

L130 ANSWER 2 OF 6 WPIX COPYRIGHT 2006 THE THOMSON CORP on STN
 AN 2003-845106 [78] WPIX
 DNC C2003-237395
 TI Synthesis of **cumene hydroperoxide**, used for producing
phenol and **acetone**, by oxidizing cumene in liquid phase
 with an oxidizing agent in presence of basic medium which does not release
 inorganic cations to the reaction environment.

DC A41 A97 E17
 IN CODIGNOLA, F; KODINIOLA, F
 PA (EURO-N) EUROTECNICA DEV & LICENSING SRL; (EURO-N) EUROTECNICA CONTRACTORS
 & ENGINEERS SPA; (CODI-I) CODIGNOLA F
 CYC 101
 PI WO 2003076381 A1 20030918 (200378)* EN 27 C07C045-53
 RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ
 NL OA PT SD SE SL SZ TR TZ UG ZM ZW
 W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK
 DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR
 KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ OM PH PL PT
 RO RU SD SE SG SI SK SL TJ TM TN TR TT TZ UA UG US UZ VN YU ZA ZM
 ZW
 AU 2002247980 A1 20030922 (200431) C07C045-53
 TW 2003004915 A 20031016 (200557) C07C037-68
 CN 1620416 A 20050525 (200568) C07C045-53
 US 2006014985 A1 20060119 (200607) C07C041-00
 ADT WO 2003076381 A1 WO 2002-IT157 20020314; AU 2002247980 A1 AU 2002-247980
 20020314, WO 2002-IT157 20020314; TW 2003004915 A TW 2003-105505 20030313;
 CN 1620416 A CN 2002-828293 20020314, WO 2002-IT157 20020314; US
 2006014985 A1 WO 2002-IT157 20020314, US 2005-507227 20050511
 FDT AU 2002247980 A1 Based on WO 2003076381
 PRAI WO 2002-IT157 20020314
 IC ICM C07C037-68; C07C041-00; C07C041-50; C07C045-53
 ICS C07C037-08; C07C409-00; C07C409-10

AB WO2003076381 A UPAB: 20051109

NOVELTY - Synthesis of **cumene hydroperoxide** comprises oxidizing cumene to **cumene hydroperoxide** in a liquid phase in the presence of an oxidizing agent and a basic medium. The basic medium is insoluble and stable in the reaction environment. It does not release inorganic cations to the reaction environment.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for (a composition containing) **cumene hydroperoxide** free of inorganic cations.

USE - The **cumene hydroperoxide** is used for producing **phenol** and **acetone** (claimed).

ADVANTAGE - The product does not contain inorganic cations. It does not require the reaction mixture to be washed with water, thus eliminating cost and loss of **cumene hydroperoxide** product.

DESCRIPTION OF DRAWING(S) - The figure shows a block diagram of the plant using oxidation reactor for the production of **cumene hydroperoxide**.

Oxidation reactor A

Concentrator B

Condenser. C1, C2

Dwg.1/2

FS CPI

FA AB; GI; DCN

MC CPI: A01-E13; A04-D07; A12-W11; E10-A04B2E; E11-E; N05-D; N07-C01

TECH UPTX: 20031203

TECHNOLOGY FOCUS - CHEMICAL ENGINEERING - Preferred Process: The oxidizing agent is oxygen in pure form or in a mixture with other gases. (preferably air). The oxidizing process is run under anhydrous conditions. The conversion to **cumene hydroperoxide** is 5-40, preferably 20-25, %. The basic medium is contained in basket(s) immersed in the oxidation reactor(s) to allow the medium to be in contact with the reaction environment. The cumene product does not contain inorganic cations. The product contains dimethyl-phenyl-carbinol in amount less than 2, preferably at most 1.5, wt.%. The oxidation reaction is carried out at 60-150, preferably 90-115, degreesC and 0.5-10 bar for 30 minutes-10 hours, preferably 1-6 hours. The reaction is run in at least two reactors in series, preferably 3 reactors in series operating at different temperatures decreasing from the first to last. The process also comprises concentrating a phase of the reaction mixture exiting from the oxidation phase for separating unreacted cumene from the **cumene hydroperoxide** product. The

concentration phase is operated after the oxidizing phase. TECHNOLOGY FOCUS - POLYMERS - Preferred Basic Medium: The basic medium is a basic resin, especially a pyridinic resin. The pyridinic resin is reticulated poly-4-vinylpyridine (a polymer of 4-ethenylpyridine with diethenylbenzene), high-porosity reticulated poly-4-vinylpyridine, or a polymer of 4-ethenylpyridine with diethenylbenzene and ethenylethylbenzene quaternarized with methyl chloride. The resin is preferably REILLEX 402-I, REILLEX 425, REILLEX HP, REILLEX HPQ or REILLEX 402 (RTMs). The basic medium is present at 0.1-60, preferably 10-25, g/kg cumene.

L130 ANSWER 3 OF 6 WPIX COPYRIGHT 2006 THE THOMSON CORP on STN

AN 2003-845105 [78] WPIX

DNC C2003-237394

TI Synthesis of **phenol** and **acetone** from **cumene**

hydroperoxide involves pretreating the hydroperoxide with acidic resins to remove inorganic cations, and decomposing in the presence of further acidic resins.

DC A41 A97 E14 E17

IN CODIGNOLA, F

jan delaval - 8 march 2006

PA (EURO-N) EUROTECNICA DEV & LICENSING SRL; (CODI-I) CODIGNOLA F
 CYC 102
 PI WO 2003076376 A2 20030918 (200378)* EN 17 C07C037-08 <--
 RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ
 NL OA PT SD SE SL SZ TR T2 UG ZM ZW
 W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK
 DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR
 KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ OM PH PL PT
 RO RU SD SE SG SI SK SL TJ TM TN TR TT T2 UA UG US UZ VN YU ZA ZM
 ZW
 AU 2002249564 A1 20030922 (200431) C07C037-08 <--
 EP 1492752 A2 20050105 (200504) EN C07C037-08 <--
 R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT
 RO SE SI TR
 US 2005177004 A1 20050811 (200553) C07C037-08 <--
 TW 2003004914 A 20031016 (200557) C07C037-20
 ADT WO 2003076376 A2 WO 2002-IT156 20020314; AU 2002249564 A1 AU 2002-249564
 20020314, WO 2002-IT156 20020314; EP 1492752 A2 EP 2002-718517 20020314,
 WO 2002-IT156 20020314; US 2005177004 A1 WO 2002-IT156 20020314, US
 2005-507225 20050414; TW 2003004914 A TW 2003-105503 20030313
 FDT AU 2002249564 A1 Based on WO 2003076376; EP 1492752 A2 Based on WO
 2003076376
 PRAI WO 2002-IT156 20020314
 IC ICM C07C037-08; C07C037-20
 ICS B01J019-00; B01J031-10; C07C039-04;
 C07C045-53; C07C045-55; C07C049-08
 AB WO2003076376 A UPAB: 20031203
 NOVELTY - Synthesis of **phenol** and **acetone** from
cumene hydroperoxide (CHP) comprises pretreating the
 starting CHP with acidic resins to obtain CHP free of inorganic cations,
 and decomposing the CHP free of inorganic cations in the presence of
 acidic resins to yield **phenol** and **acetone**.
 DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for
 plant for performing the process comprising decomposing reactor (3) of the
 CHP with pre-established amount of acidic resin, pre-treating reactor(s)
 (1a-b) of CHP with acid resins, recirculating mechanisms for recirculating
 portion of products of the decomposing reaction to the decomposition
 reactor, optionally heat exchanger (5) downstream of the decomposing
 reactor along the recirculating line of the products portion of
 decomposing reaction, and optionally cooling jacket (4) of the decomposing
 reactor and pretreating reactor.
 USE - **Cumene hydroperoxide** is used for
 synthesizing **phenol** and **acetone**.
 ADVANTAGE - The process eliminates inorganic cations from the CHP,
 thus making it possible to perform the decomposition step. It does not
 generate any residues that are difficult to dispose of. The process does
 not cause saturation of the resin's acidic sites due to the cations in the
 decomposing reactor. It allows the reactor to operate on a continuous
 basis, without requiring regeneration of the resin.
 DESCRIPTION OF DRAWING(S) - The figure shows a simplified block
 diagram of the plant.
 Pre-treating reactor 1a-b
 Decomposing reactor 3
 Cooling jacket 4
 Heat exchanger 5
 Single charging lines B
 Transferring lines B1-2
 Dwg.1/1
 FS CPI
 FA AB; GI; DCN

MC CPI: **A01-E13**; A12-W11; **E10-E02B1**; **E10-F02B**;
E11-G02; N05-E02; N07-F02

TECH UPTX: 20031203

TECHNOLOGY FOCUS - CHEMICAL ENGINEERING - Preferred Process: The pretreatment of CHP with acidic resins is carried out at a temperature that does not cause decomposition of CHP, preferably below 20degreesC. The decomposition of CHP is carried out at 35-90, preferably 40-50degreesC. The method also comprises drawing a portion of reaction mixture exiting the decomposing step of the CHP, cooling to 35-45, preferably 40degreesC, and recirculating the reaction mixture to decomposition step; and a regenerating step for acidic resin used in pretreating CHP. The acidic resin regenerating step is carried out by treating with a solution of sulfuric acid, preferably 15 wt.% sulfuric acid. The recycled product produced in the drawing, cooling and recirculating steps comprises reaction mixture (80-95, preferably 90 wt.%) exiting from the decomposing step. The plant comprises at least two pretreating reactors of CHP with acidic resin. The pretreating reactors are set up in parallel and operate in an alternating manner.

TECHNOLOGY FOCUS - POLYMERS - Preferred Resins: The acidic resin employed in pretreatment and decomposition steps is 2-25, preferably 10, wt.% based on the hourly flow rate of CHP in each step. The acidic resin is ion exchange resin with sulfonic acid (-SO3H) functional groups tied to an organic chain, preferably to a polystyrene or styrene-divinylbenzene polymer. The acidic resin is preferably Amberlyst 15, Amberlyst 18 or Nafion (RTMs).

L130 ANSWER 4 OF 6 WPIX COPYRIGHT 2006 THE THOMSON CORP on STN

AN 2003-210220 [20] WPIX

DNC C2003-053600

TI Preparation of hydroxy-substituted organic compound, e.g. bisphenol A, by decomposing organic hydroperoxide in the presence of catalyst containing fluorinated polymer having sulfonic acid groups.

DC A41 E14

IN HARMER, M A; HOWARD, E G; LLOYD, R B; SUN, Q

PA (HARM-I) HARMER M A; (HOWA-I) HOWARD E G; (LLOY-I) LLOYD R B; (SUNQ-I) SUN Q; (DUPO) DU PONT DE NEMOURS & CO E I

CYC 23

PI WO 2003002499 A1 20030109 (200320)* EN 18 C07C037-08 <--
RW: AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE TR
W: CN JP

US 2003050513 A1 20030313 (200321) C07C039-16

US 6586640 B2 20030701 (200345) C07C037-08 <--

EP 1399403 A1 20040324 (200421) EN C07C037-08 <--

R: AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE TR

CN 1524067 A 20040825 (200477) C07C037-08 <--

JP 2004536100 W 20041202 (200479) 31 C07C027-12

ADT WO 2003002499 A1 WO 2002-US19704 20020621; US 2003050513 A1 Provisional US 2001-300840P 20010626, US 2002-177853 20020620; US 6586640 B2 Provisional US 2001-300840P 20010626, US 2002-177853 20020620; EP 1399403 A1 EP 2002-742243 20020621, WO 2002-US19704 20020621; CN 1524067 A CN 2002-812838 20020621; JP 2004536100 W WO 2002-US19704 20020621, JP 2003-508684 20020621

FDT EP 1399403 A1 Based on WO 2003002499; JP 2004536100 W Based on WO 2003002499

PRAI US 2001-300840P 20010626; US 2002-177853 20020620

IC ICM C07C027-12; **C07C037-08**; C07C039-16

ICS **B01J031-10**; B01J031-26; C07C037-20; **C07C039-04**;
C07C039-08; C07C045-53; **C07C049-08**

AB WO2003002499 A UPAB: 20030324

NOVELTY - A hydroxy-substituted organic compound is prepared by decomposing an organic hydroperoxide in the presence of a catalyst containing fluorinated polymer having sulfonic acid groups. The catalyst is in the form of particles of which 20 weight% have particle size of less than 300 μ m.

USE - The process is used for the manufacture of hydroxy-substituted organic compounds e.g. **phenols** or hydroquinones, especially 2,2-bis(4-hydroxyphenyl)-propane (Bisphenol A) (claimed).

ADVANTAGE - The process increases the rate of the decomposition reaction and provides higher reaction rates than conventional processes. It provides hydroxy-substituted organic compounds in high purity and yield at moderate temperatures.

Dwg.0/0

FS CPI

FA AB; DCN

MC CPI: A01-E13; E10-E02D4; E10-E02D5;

E10-E02P; E10-E04; E11-E; N01-D02; N07-C01

TECH UPTX: 20030324

TECHNOLOGY FOCUS - ORGANIC CHEMISTRY - Preferred Method: The method involves decomposing a compound of formula $\text{ArC}(\text{CH}_3)_2\text{O}_2\text{H}$.

Ar = optionally substituted mononuclear or polynuclear aromatic group.

The compound to be decomposed consists of **cumene**

hydroperoxide or diisopropylbenzene dihydroperoxide. The process is carried out in an organic solvent, preferably **acetone**, at -15 to 150 (preferably 20-100) degrees C.

TECHNOLOGY FOCUS - POLYMERS - Preferred Catalyst: The catalyst is selected from:

(a) particles of highly fluorinated polymer having sulfonic acid groups and

(b) particles of porous microcomposite of a metal oxide or silica network and highly fluorinated polymer having sulfonic acid groups.

Preferred Composition: At least 20 wt.% of the particles have particle size of less than 100 microns.

ABEX UPTX: 20030324

EXAMPLE - A 1680 ml perfluorinated sulfonic acid polymer solution was treated with 140 ml of 0.4 M sodium hydroxide with stirring. 56 g of tetramethyl silicate were added to 9.8 g of water and 0.8 g of 0.4 M hydrochloric acid, and then stirred. The solutions were mixed. The gelled mixture was dried at 95-100 degrees C for 2 days, and the product was subjected to grinding for 1 hour. The solid was then treated with 2 liters of 25 weight% nitric acid, and stirred for 12 hours. The acid was decanted and then replaced with 2 liters of deionized water and stirred for 12 hours. The solid was filtered and resuspended in 2 liters of 25 weight% nitric for another 12 hours, and then treated with water. The process was repeated a third time. The material was filtered, and dried at 110 degrees C overnight under vacuum. The solid contained 80 weight% perfluorinated sulfonic acid polymer with 0.1-20 microns particle size. It was used in decomposing **cumene hydroperoxide**. The decomposition rate was greater than 10000 mM/g.cat.hour.

L130 ANSWER 5 OF 6 WPIX COPYRIGHT 2006 THE THOMSON CORP on STN

AN 1997-294899 [27] WPIX

DNC C1997-095258

TI Bisphenol-A manufacture without using distillation toner - by reacting **phenol** and **acetone** with by-product water removal and unreacted **acetone** recovery using flow-out liquid.

DC A14 E14

PA (MITU) MITSUBISHI CHEM CORP

CYC 1

jan delaval - 8 march 2006

PI JP 09110766 A 19970428 (199727)* 7 C07C039-16
 ADT JP 09110766 A JP 1995-272437 19951020
 PRAI JP 1995-272437 19951020
 IC ICM C07C039-16
 ICS **B01J031-10**; C07C037-20; C07C037-74; **C07C039-04**;
 C07C045-82; **C07C049-08**

ICA C07B061-00

AB JP 09110766 A UPAB: 19971006

Manufacturing bisphenol A comprises reacting **phenol** and **acetone**. Removal of a side product water and recovery of unreacted **acetone** are conducted by feeding a flow-out liquid (containing unreacted **acetone**, water and **phenol**) at the time of separation of bisphenol A to be purified to a stage of **acetone** purification and/or a stage of **phenol** purification following a stage of acid decomposition of **cumene hydroperoxide**.

ADVANTAGE - Method requires no distillation toner, thus saving both energy consumption and equipment cost.
 Dwg.0/3

FS CPI

FA AB; DCN

MC CPI: **A01-E13**; **E10-E02A**; N01-A

L130 ANSWER 6 OF 6 WPIX COPYRIGHT 2006 THE THOMSON CORP on STN

AN 1995-185168 [24] WPIX

DNC C1995-086127

TI Purificn. of **phenol** to remove methyl-benzofuran - by treatment with acetol and a aromatic sulphonic acid resin, useful in.

DC A41 D21 E14

IN CRESCENTINI, L; JENCZEWSKI, T J; KWEEDER, J; KWEEDER, J A

PA (SUNO-N) SUNOCO INC R & M; (ALLC) ALLIED-SIGNAL INC; (SUNO) SUN CO INC R & M

CYC 22

PI US 5414154 A 19950509 (199524)* 3 C07C037-68

WO 9533703 A1 19951214 (199604) EN 9 C07C037-86

RW: AT BE CH DE DK ES FR GB GR IE IT LU MC NL PT SE

W: CN JP KR RU

EP 764146 A1 19970326 (199717) EN C07C037-86

R: DE ES FR GB

JP 09506636 W 19970630 (199736) 11 C07C039-04 <--

KR 97703296 A 19970703 (199829) C07C037-86

JP 2888260 B2 19990510 (199924) 4 C07C037-86

EP 764146 B1 19990804 (199935) EN C07C037-86

R: DE ES FR GB

DE 69511271 E 19990909 (199943) C07C037-86

ES 2134473 T3 19991001 (199948) C07C037-86

RU 2134681 C1 19990820 (200032) C07C037-86

TW 408105 A 20001011 (200116) C07C037-86

KR 365103 B 20030602 (200361) C07C037-86

CN 1155879 A 19970730 (200375) C07C037-86

CN 1073070 C 20011017 (200508) C07C037-86

ADT US 5414154 A US 1994-254729 19940606; WO 9533703 A1 WO 1995-US5081

19950503; EP 764146 A1 EP 1995-918294 19950503; WO 1995-US5081 19950503;

JP 09506636 W WO 1995-US5081 19950503; JP 1996-500849 19950503; KR

97703296 A WO 1995-US5081 19950503; KR 1996-706431 19961113; JP 2888260 B2

WO 1995-US5081 19950503; JP 1996-500849 19950503; EP 764146 B1 EP

1995-918294 19950503; WO 1995-US5081 19950503; DE 69511271 E DE

1995-611271 19950503; EP 1995-918294 19950503; WO 1995-US5081 19950503; ES

2134473 T3 EP 1995-918294 19950503; RU 2134681 C1 WO 1995-US5081 19950503;

RU 1997-100166 19950503; TW 408105 A TW 1995-104656 19950511; KR 365103 B

WO 1995-US5081 19950503; KR 1996-706431 19961113; CN 1155879 A CN

1995-193451 19950503; CN 1073070 C CN 1995-193451 19950503
FDT EP 764146 A1 Based on WO 9533703; JP 09506636 W Based on WO 9533703; KR
97703296 A Based on WO 9533703; JP 2888260 B2 Previous Publ. JP 09506636,
Based on WO 9533703; EP 764146 B1 Based on WO 9533703; DE 69511271 E Based
on EP 764146, Based on WO 9533703; ES 2134473 T3 Based on EP 764146; RU
2134681 C1 Based on WO 9533703; KR 365103 B Previous Publ. KR 97703296,
Based on WO 9533703

PRAI US 1994-254729 19940606

REP 1.Jnl.Ref; GB 1108327; GB 1108584; GB 1231991; US 3029294; US 3454653

IC ICM C07C037-68; C07C037-86; C07C039-04

ICS C07C037-08; C07C037-70; C07C037-74

ICA B01J031-10

AB US 5414154 A UPAB: 19950626

Reduction of methylbenzofuran (MBF) impurities in **phenol** obtd. from
the decomposition. prod. of **cumene hydroperoxide**,
comprises: (a) treating the **phenol** to reduce the level of acetol
(hydroxyacetone) to less than 260 ppm; (b) contacting the **phenol**
with an aromatic sulphonic resin or a solid superacid catalyst to reduce
the level of MBF by conversion to higher boiling cpds.; and (c)
distilling the **phenol** to separate it from the higher boiling
cpds.

Pref. in step (a) the amount of acetol is pref. reduced to less than
200 ppm by contact with an amine. Step (b) is by contact pref. with an
aromatic sulphonic resin bed at 70-120 (pref. 80-110)deg.C and a rate of
1-10 (pref. 2-6) bed volume/hr.

USE - Discolouration of **phenol** prods. on ageing,
sulphonation or chlorination is reduced.

ADVANTAGE - Prior purificn. treatment with corrosive halogenated
cpds. or steam stripping, both of which use expensive equipment, is
avoided. MBF levels are efficiently and economically reduced to less than
10 ppm, pref. less than 5 ppm and especially less than 1 ppm (claimed), e.g.
less than 0.1 ppm.

Dwg.0/0

FS CPI

FA AB; DCN

MC CPI: A01-E13; D08-B09A; E10-E02B1; E11-Q01

=> d his

(FILE 'HOME' ENTERED AT 12:57:24 ON 08 MAR 2006)

SET COST OFF

FILE 'HCAPLUS' ENTERED AT 12:57:51 ON 08 MAR 2006

L1 1 S US20050177004/PN OR (US2003-507225# OR WO2002-IT156)/AP, PRN
E CODIGNOLA/AU

L2 40 S E8
E EUROTECNICA/PA,CS

L3 25 S E3-E36
E EUROTECHNICA/PA,CS

L4 2 S E3-E10

FILE 'REGISTRY' ENTERED AT 13:00:28 ON 08 MAR 2006

L5 1 S 80-15-9

L6 54 S 80-15-9/CRN

L7 48 S L6 NOT IDS/CI

L8 14 S L7 NOT COMPD

L9 11 S L8 NOT MXS/CI

L10 9 S L9 NOT PMS/CI

L11 7 S L10 NOT (H2O2 OR O2S)

jan delaval - 8 march 2006

L12 8 S L5,L11

FILE 'HCAPLUS' ENTERED AT 13:03:47 ON 08 MAR 2006

L13 6277 S L12
L14 7993 S (CUMEN OR CUMENE OR CUMYL OR CUMENYL) () (HYDROPEROXIDE OR HYDR
L15 1870 S 1 METHYL 1 PHENYLETHYL HYDROPEROXIDE OR 2 HYDROPEROXY 2 PHENY
L16 1 S CUMENHYDRO PEROXIDE
L17 59 S CUMENEHYDROPEROXIDE
L18 11037 S L13-L17

FILE 'REGISTRY' ENTERED AT 13:07:17 ON 08 MAR 2006

L19 2 S PHENOL/CN OR ACETONE/CN

FILE 'HCAPLUS' ENTERED AT 13:07:23 ON 08 MAR 2006

L20 10144 S L19(L) PREP+NT/RL
L21 376 S L18 AND L20
L22 17369 S L19 (L) PROC+NT/RL
L23 48 S L18 AND L22
L24 397 S L21,L23
L25 49 S L12(L) PROC+NT/RL AND L24
L26 242 S L12(L) RACT+NT/RL AND L24
L27 267 S L25,L26
E ION EXCHANGE/CT
L28 1 S E12
E E13+ALL
E E2+ALL
L29 51963 S E4+OLD,NT
L30 27173 S E36+OLD,NT
L31 9126 S E37+OLD,NT
L32 19 S L27 AND L28-L31
L33 24637 S L20,L22 AND (PHENOL OR ACETONE)
L34 427 S L33 AND L28-L31
L35 428 S L32,L34

FILE 'REGISTRY' ENTERED AT 13:11:59 ON 08 MAR 2006

L36 1 S 7664-93-9
L37 1 S 9003-53-6
L38 1 S 100-42-5
L39 72170 S 100-42-5/CRN
E C10H10/MF
L40 79 S E3 AND 46.150.18/RID AND 1/NR
L41 61 S L40 NOT (D OR T)/ELS
L42 8 S L41 AND DIETHENYL
L43 5 S L42 NOT RADICAL
SEL RN
L44 10534 S E1-E5/CRN
L45 3961 S L39 AND L44
L46 33 S L45 AND 2/NC

FILE 'HCAPLUS' ENTERED AT 13:14:57 ON 08 MAR 2006

L47 178556 S L37 OR L38 OR L43 OR L46
L48 54 S L35 AND L47
L49 2 S L48 AND L36
L50 2 S L1-L4 AND L18
L51 3 S L49,L50
L52 3 S L51 AND L1-L4,L13-L18,L20-L35,L47-L51

FILE 'REGISTRY' ENTERED AT 13:17:12 ON 08 MAR 2006

E AMBERYLST/CN
E AMBERLYST/CN

jan delaval - 8 march 2006

L53 2 S E8,E24
E AMBERYLST
E AMBERLYST
L54 100 S E3
L55 28 S L54 AND (STYRENE OR POLYSTYRENE OR DIVINYLBENZENE OR DIVINYL
L56 28 S L53,L55

FILE 'HCAPLUS' ENTERED AT 13:19:09 ON 08 MAR 2006

L57 24 S L56 AND L35
L58 26 S L52,L57
L59 48 S L48 NOT L58
L60 1 S L59 AND L18
L61 397 S L24,L27
L62 83 S L12(L)PROC+NT/RL AND (PHENOL OR ACETONE)
L63 370 S L12(L)RACT+NT/RL AND (PHENOL OR ACETONE)
L64 560 S L61-L63
L65 34 S L64 AND L28-L31
L66 48 S L64 AND (CATION? OR ION? OR ANION?)()EXCHANG?
L67 48 S L65,L66
L68 6 S L67 AND L36
L69 3 S L67 AND L47
L70 8 S L67 AND L56
L71 2 S L1-L4 AND L18,L24,L27,L61,L64,L67
L72 15 S L68-L71
SEL AN 2 10
L73 13 S L72 NOT E1-E4
L74 3 S L73 AND H2SO4
L75 6 S L73 AND (SULFURIC OR SULPHURIC)()ACID
L76 10 S L73 AND (SULF? OR SULPH?)
L77 3 S L73 NOT L74-L76
L78 13 S L73-L77
SEL HIT RN

FILE 'REGISTRY' ENTERED AT 13:33:10 ON 08 MAR 2006

L79 10 S E5-E14

FILE 'REGISTRY' ENTERED AT 13:33:38 ON 08 MAR 2006

FILE 'HCAPLUS' ENTERED AT 13:33:52 ON 08 MAR 2006

L80 1 S L71 NOT L78
L81 1 S L80 AND L1-L4,L13-L18,L20-L35,L47-L52,L56,L57-L78
SEL RN

FILE 'REGISTRY' ENTERED AT 13:38:16 ON 08 MAR 2006

L82 8 S E15-E22
L83 7 S L82 NOT L79
L84 4 S L83 AND REILLEX

FILE 'HCAPLUS' ENTERED AT 13:39:04 ON 08 MAR 2006

FILE 'WPIX' ENTERED AT 13:41:53 ON 08 MAR 2006

E C07C037-08/IC,ICM,ICS
L85 394 S E3-E7
E C07C037-08/ICA
L86 1 S E3
E C07C037-08/ICI
L87 395 S C07C037-08/IPC
L88 2419 S L14 OR L15 OR L16 OR L17
E CUMENE HYDROPEROXIDE/CN
L89 1 S E3,E5

L90 2625 S R00474/PLE OR 807-0-0-0/DCSE OR R00474/DCN OR 0474/DRN
L91 0 S 2 PHENYL PROP 2 YL HYDROPEROXIDE OR PHCME2OOH
L92 4123 S L85-L88,L90
L93 148187 S PHENOL OR ACETONE
E PHENOL/CN
L94 3 S E3-E5
E ACETONE/CN
L95 1 S E3
L96 4 S L94,L95
SEL SDCN
EDIT /SDCN /DCN
L97 4474 S E1-E4
L98 15890 S (0272 OR 0868 OR 1120)/DRN
SEL DCSE L96
EDIT E5-E8 /DCSE /DCRE
L99 2934 S E5-E8
L100 153094 S L93,L97-L99
E C07C039-04/IC, ICM, ICS
L101 762 S E3-E7
E C07C039-04/ICA
L102 6 S E3
E C07C039-04/ICI
L103 1 S E7
L104 767 S C07C039-04/IPC
E C07C049-08/IC, ICM, ICS
L105 341 S E3-E11
E C07C049-08/ICA
L106 9 S E3
E C07C049-08/ICI
L107 347 S C07C049-08/IPC
L108 820 S L100-L107 AND L92
L109 643 S B01J031-10/IPC
E B01J031-10/IC, ICM, ICS
L110 618 S E3-E7
E B01J031-10/ICA
L111 30 S E3
E B01J031-10/ICI
L112 8 S L108 AND L109-L111
L113 309 S A01-E13/MC AND L92
L114 8 S L113 AND L109-L111
L115 9 S L112,L114
L116 9 S E10-E02?/MC AND L92 AND L109-L111
L117 2 S E10-F02B/MC AND L92 AND L109-L111
L118 0 S E10-F02C/MC AND L92 AND L109-L111
L119 9 S L114-L117
L120 2 S L119 AND B01J019/IPC
L121 2 S L119 AND B01J019/IC, ICM, ICS, ICA, ICI
L122 2 S L120,L121
L123 7 S L119 NOT L122
SEL DN AN 2 3 5 7
L124 3 S L123 NOT E1-E7
L125 5 S L122,L124
E CODIGNOLA/AU
L126 2 S E4 AND L92
L127 3 S E4 AND L100-L107
L128 3 S L126,L127
L129 2 S L128 NOT RUTHENIUM
L130 6 S L125,L129

FILE 'WPIX' ENTERED AT 14:14:56 ON 08 MAR 2006

jan delaval - 8 march 2006

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